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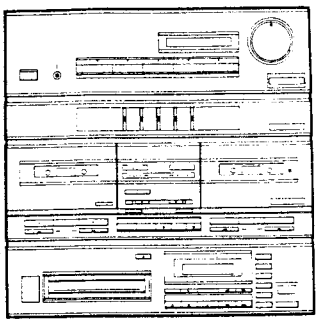
Service Manual



ORDER NO.
ARP1719

STEREO MULTI CD CASSETTE DECK AMPLIFIER

XD-Z62M

MODEL XD-Z62M HAS THREE VERSIONS:

Type	Power requirement	Export destination
HB	AC220V,240V (switchable)*	United Kingdom
HE	AC220V,240V (switchable)*	European continent
HEZ	AC220V,240V (switchable)*	West Germany

* Change the jumper wires of assembly boards.

- This manual is applicable to the XD-Z62M/HB and HE types.
- For the HE type, refer to page 22.
- For the other type, refer to additional servise manual.
- The XD-Z62M servise manual consists of a CD block and a deck amplifier block.
  For detalies, see page6. The CD block is descrived in pages23 to 79.
  The Deck amplifier block in pages81 to 145.
- Ce manuel pour le servise comprend les explications en françasis de réglage.
  (voir les pages58 à 68 pour le bloc CD, et les pages136 à 140 pour bloc de l'amplificateur.)
- Este manual de servicio trata del método ajuste escrite en español.
  (Vea las páginas69 a 79 para el bloque de CD, y las páginas141 a 145 para el bloque del amplificador/grabadora.)

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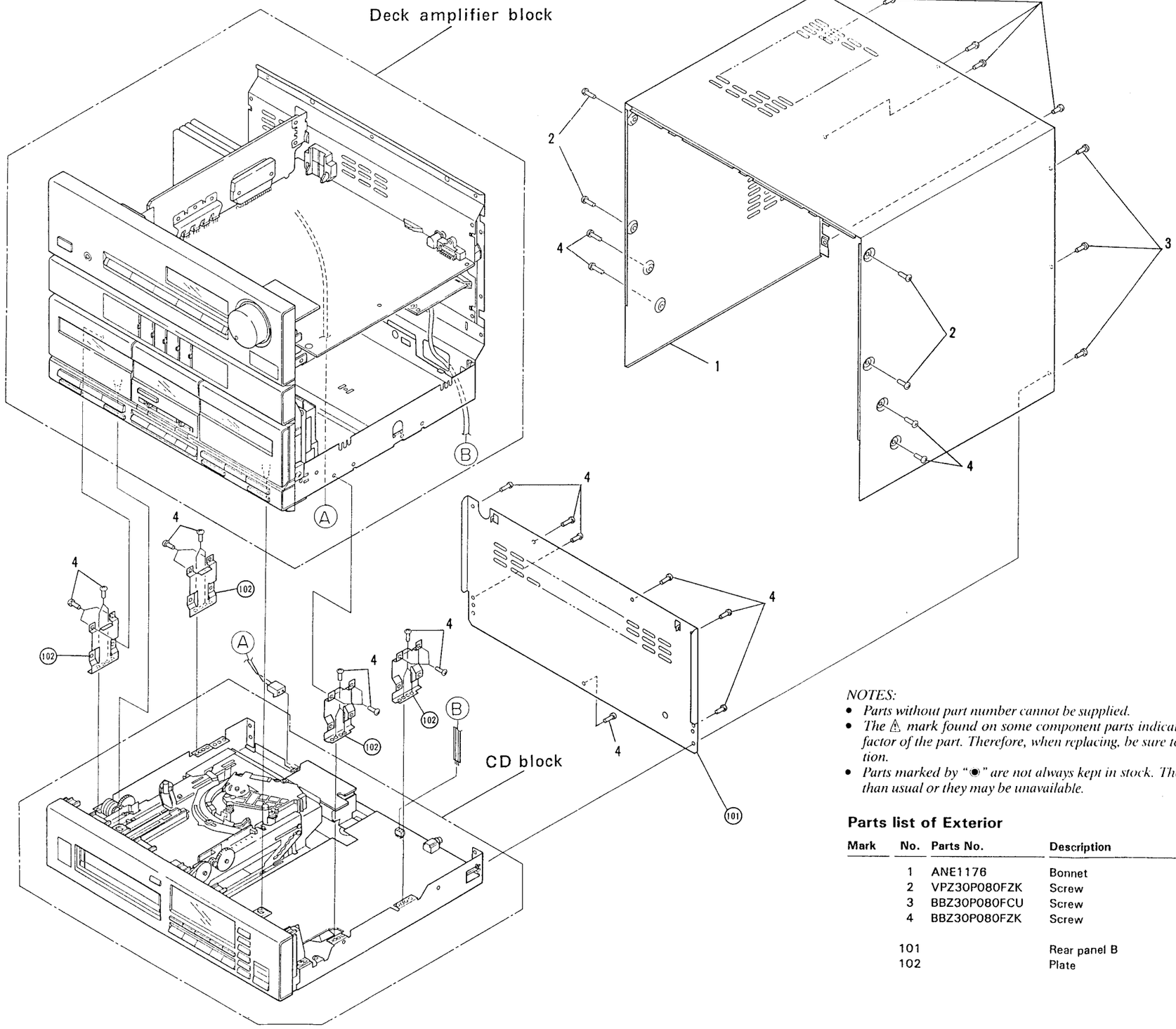
4.1 EXPLODED VIEWS AND PARTS LIST



NOTES:

- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

Parts list of Exterior

Mark	No.	Parts No.	Description
	1	ANE1176	Bonnet
	2	VPZ30P080FZK	Screw
	3	BBZ30P080FCU	Screw
	4	BBZ30P080FZK	Screw
	101		Rear panel B
	102		Plate

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5. LINE VOLTAGE SELECTION FOR HB, HE AND HEZ TYPES

• Line voltage can be changed with the following steps.

1. Disconnect the AC power cord.
2. Remove the bonnet and separate the deck amplifier block and the CD block.
3. CD block (TRANSFORMER BOARD assembly); change the position of the wire Ⓕ as follows.

Voltage	Terminal No. of Transformer board assembly
220V	①
240V	②

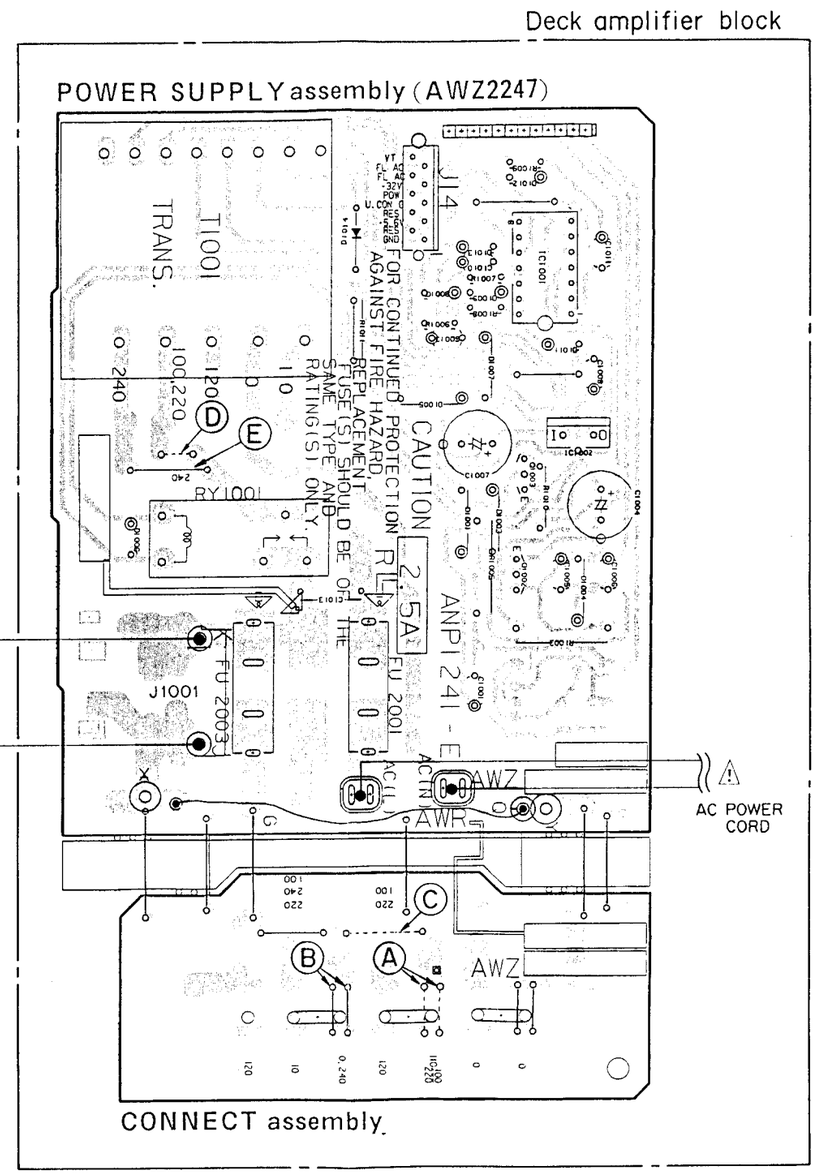
Deck amplifier block (POWER SUPPLY assembly); Change the position of the jumper wires Ⓐ-Ⓔ as follows.

Jumper wire Voltage	220V	240V
Ⓐ	○	×
Ⓑ	×	○
Ⓒ	○	×
Ⓓ	○	×
Ⓔ	×	○

○: Be needed
×: Be needless

4. Stick the line volage label on the rear panel.

Description	Part No.
220Vlabel	AAX-193
240Vlabel	AAX-192



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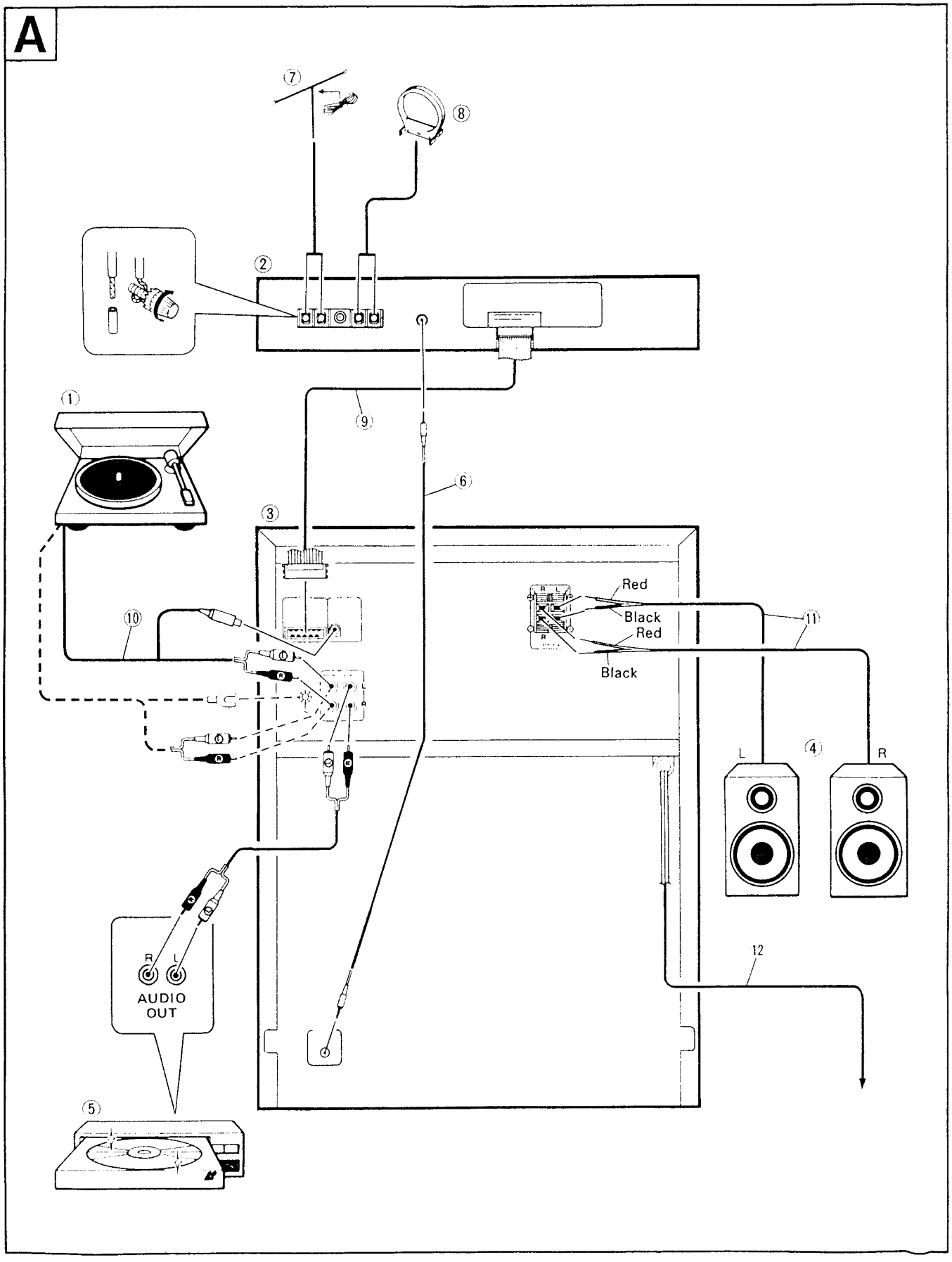
6. CONNECTIONS



4.2 OVER ALL SCHEMATIC DIAGRAM

DECK AMPLIFIER BLOCK

FUNCTION BOARD assembly (PWZ1542)

MAIN BOARD assembly (PWZ1538)

PICK UP assembly (PWY1008)

TRANSFOMER BOARD assembly

SERVO MECHANISM assembly

SWITCH BOARD assembly

SELECT BOARD assembly

CONTROL IN

FUNCTION assembly

PHONO

VIDEO

MAIN VR assembly

AF assembly (AWZ2217)

DECK CTRL assembly (AWZ2219)

MECHA 1 UNIT

MECHA 2 UNIT

DECK-1 SW assembly

DECK-2 SW assembly

AMP.GEQ CTRL assembly (AWZ2218)

DECK CENTER assembly

TRANS CONNECT assembly

CONNECT assembly

POWER SW assembly

CD BLOCK

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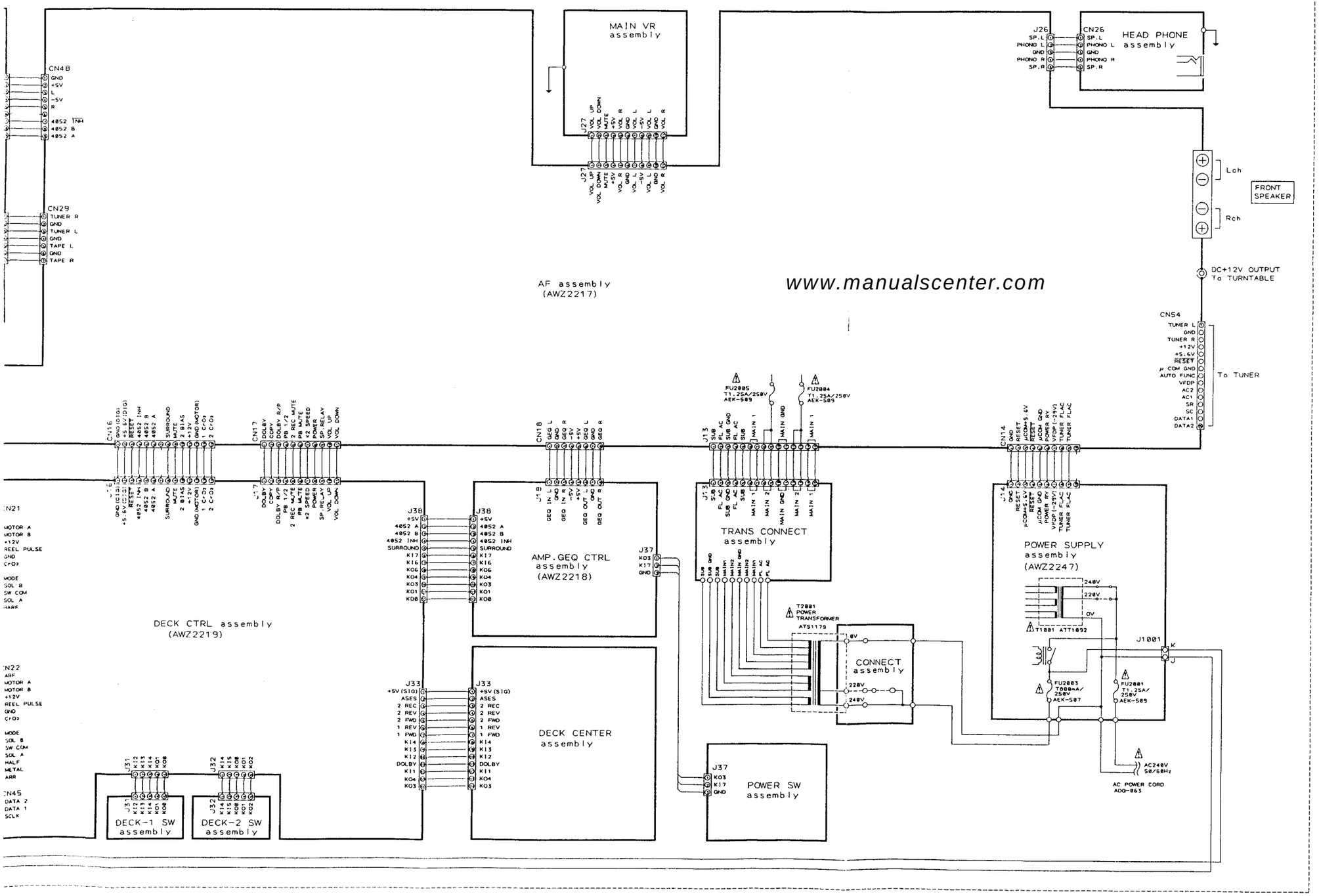
Note

Refer to page 12 for LINE VOLTAGE SELECTION.



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1. RESISTORS:
Indicated in Ω, ¼W, ⅙W. ±5% tolerance unless otherwise noted k : kΩ, M : MΩ, (F) : ±1%, (G) : ±2%, (K) : ±10% (M); ±20% tolerance

2. CAPACITORS:
Indicated in capacity (μF)/voltage (V) unless otherwise noted p : pF
Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE, CURRENT:
▭ : Signal voltage at (33 W + 33 W 8Ω)output (1kHz)
▭ : DC voltage (V) at no input signal
Value in ( ) is DC voltage at rated power.
⇦ mA : DC current at no input signal

4. OTHERS:
➡ : Signal route.
⊘ : Adjusting point.
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
※ marked capacitors and resistors have parts numbers.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

SWITCHES:

CD Block
FUNCTION BOARD assembly(PWZ1542)
S201-S207,S216,S217, Tact SW
S222-S230

SWITCH BOARD assembly
S701-S704 Slide SW

SELECT BOARD assembly
S601 Slide SW

MAIN BOARD assembly(PWZ1538)
S1 Tact SW

Deck amplifier Block

AMP,GEQ CTRL assembly(AWZ2218)
S701-S705 Tact SW

DECK-1 SW assembly
S811-S815 Tact SW

DECK-2 SW assembly
S821-S825 Tact SW

DECK CENTER assembly
S847 Dolby ON-OFF
S848 Reverse mode
S841-S846 Tact SW

POWER SW assembly
S707 Power

The underline indicates the switch position.

8. FOR HE TYPE

8.1 CONTRAST OF MISCELLANEOUS PARTS

NOTES:

- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

The XD-Z62M/HE type is the same as the XD-Z62M/HB type with the exception of the following sections.

Mark	Symbol & Description	Part No.		Remarks
		XD-Z62M/HB type	XD-Z62M/HE type	
	POWER SUPPLY assembly	AWZ2247	AWZ2245	
	CONNECT assembly	Non supply	Non supply	
⚠	FU2003 Fuse (T800mA/250V)	AEK-507	AEK-031	DECK AMPLIFIER BLOCK
⚠	FU2001, FU2004, FU2005 Fuse (T1.25A/250V)	AEK-509	AEK-018	DECK AMPLIFIER BLOCK
⚠	AC Power cord	ADG-063	ADG1021	DECK AMPLIFIER BLOCK
	Caution card	ARM1003	.....	PACKING
	Operating instruction (English)	ARM1157	.....	PACKING
	Operating instruction (German)	.....	ARC1140	PACKING
	Operating instruction (English, German, French, Italian, Dutch, Swedish, Spanish, Portguese)	.....	ARE1121	PACKING
	CD block	Non supply (240V)	Non supply (220V)	*1

* 1: The only difference between the HB type CD block and the HE type CD block is connection of the power supply (220V and 240V). For detailes, refer to LINE VOLTAGE SELECTION

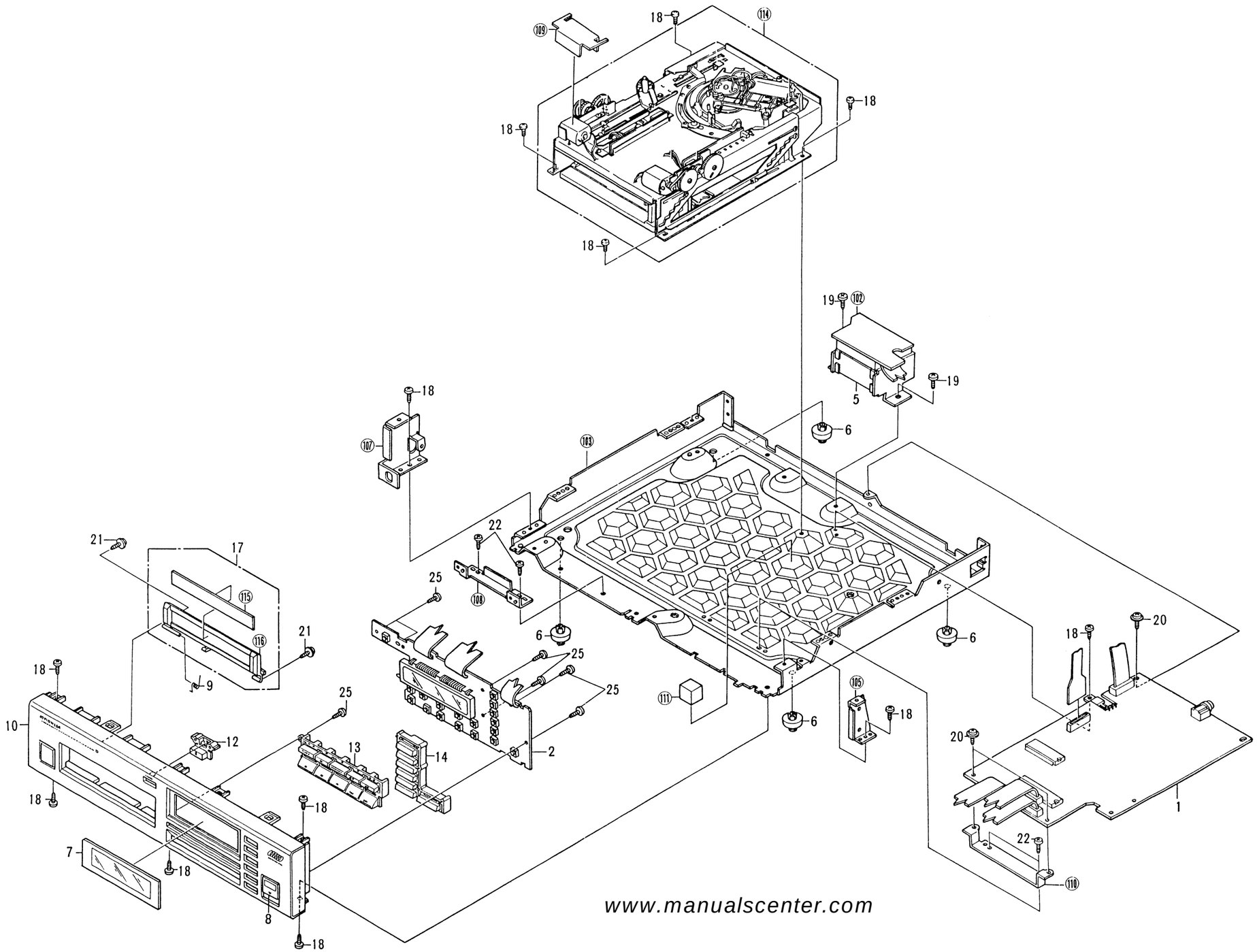
8.2 POWER SUPPLY assembly (AWZ2245; HE type) and CONNECT assembly (HE type).

The difference in parts between the POWER SUPPLY assemblies of the HE type (AWZ2245) and the HB type (AWZ2247) is the jumper wire (220V and 240V).
The difference in parts between the CONNECT assemblies of the HE type and the HB type is the jumper wire (220V and 240V).
For detailes, refer to LINE VOLTAGE SELECTION

9. CD BLOCK

9.1 EXPLODED VIEWS AND PARTS LIST

9.1.1 Exterior



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NOTES:

- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

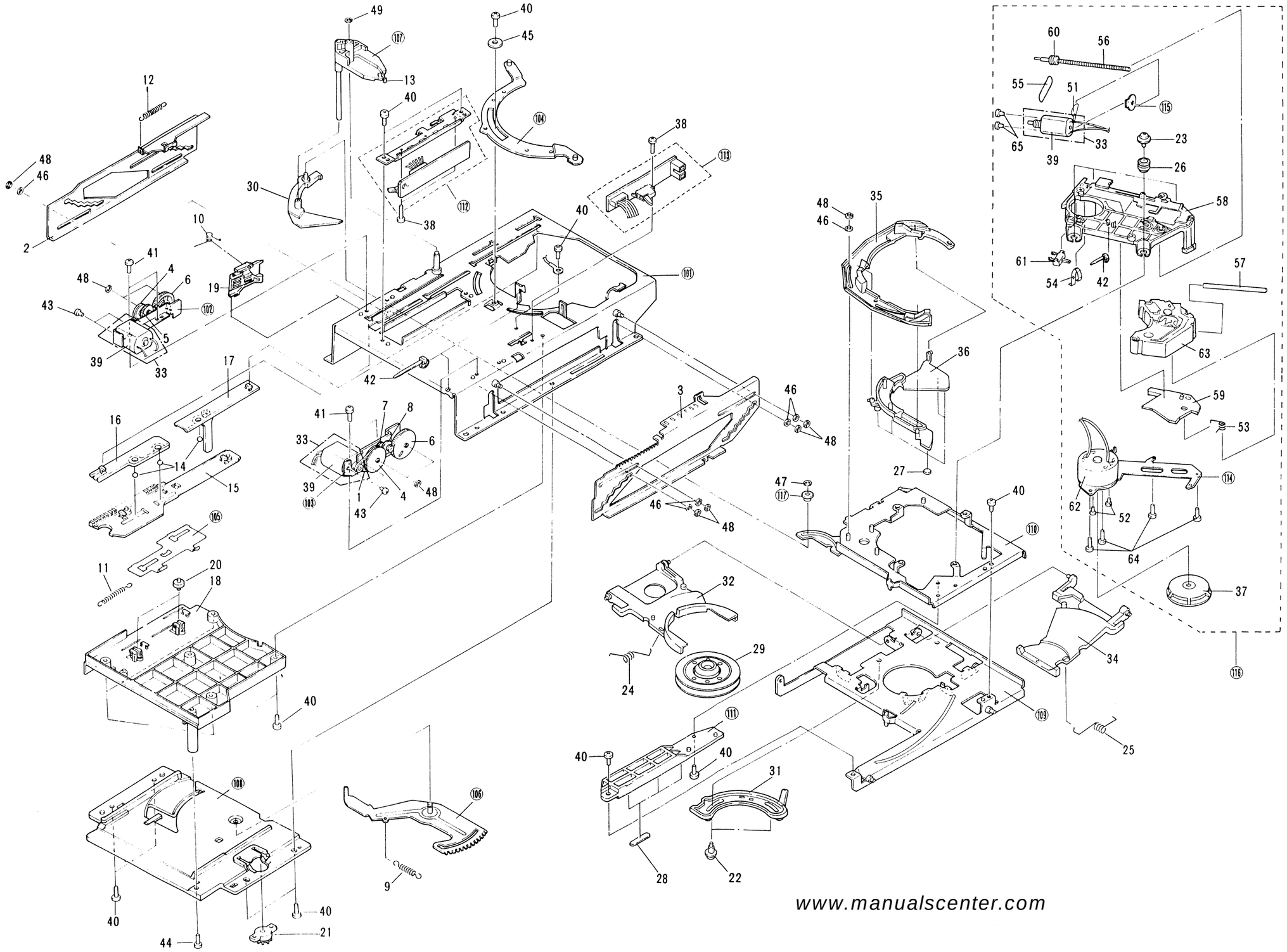
Parts List of Exterior

Mark	No.	Part No.	Description
⚠◉	1	PWZ1538	Main board assembly
◉	2	PWZ1542	Function board assembly
	3		.....
	4		.....
	5	PTT1069	Power transformer (AC220/240V)
	6	PXA1201	Leg assembly
	7	PAM1262	Window
	8	PAM1263	Decoration plate
	9	PBH1022	Door spring
	10	PNW1503	Function panel
	11		.....
	12	PAC1344	Eject button
	13	PAC1345	Function button
	14	PAC1346	Disc button
	15		.....
	16		.....
	17	PYY1092	Door assembly
	18	BBZ30P080FZK	Screw
	19	BBZ40P060FMC	Screw
	20	IBZ30P060FCC	Screw
	21	IPZ30P060FMC	Screw
	22	PCZ30P050FZK	Screw
	23	PEC-107	Binder
	24		.....
	25	PPZ30P100FMC	Screw
	101		.....
	102		Transformer board assembly
	103		Base
	104		.....
	105		Angle
	106		.....
	107		Front angle (A)
	108		Angle (P)
	109		Shield plate (M)
	110		P.C.B angle
	111		Cushion
	112		.....
	113		.....
	114		Multi mechanism assembly
	115		Door name plate
	116		Door

9.1.2 Mechanism section

Parts List of Mechanism Section

Mark	No.	Part No.	Description
	1.	PEB1015	Belt
	2.	PNB1028	Stair (L)
	3.	PNB1138	Stair (R)
	4.	PNW1095	Gear pulley
	5.	PNW1096	Gear
	6.	PNW1097	Gear
	7.	PNW1122	Gear
	8.	PNW1098	Idler gear
	9.	PBH-465	Eject spring
	10.	PBH1014	Lock spring
	11.	PBH1015	SM spring
	12.	PBH1018	Stair spring
	13.	PBK1009	Drive spring
	14.	PBP-001	Steel ball ϕ4
	15.	PNW1099	Rack
	16.	PNW1253	Drive plate
	17.	PNW1101	Operation plate
	18.	PNW1102	Top guide
	19.	PNW1395	Lock lever
	20.	PNY-386	Roller
	21.	PXC-016	Damper assembly
	22.	PBA-125	Screw
	23.	PBA1002	Screw
	24.	PBH1016	Clamper spring (T)
	25.	PBH1017	Clamper spring (B)
	26.	PEB1014	Float rubber
	27.	PED1001	Cushion (A)
	28.	PED1002	Cushion (B)
	29.	PNW1448	Clamper
	30.	PNW1105	Rotary lever
	31.	PNW1106	Clamper cam
	32.	PNW1107	Clamper holder (T)
	33.	PYY1025	Motor assembly (CARRIAGE, LOADING, DISC SELECT)
	34.	PNW1108	Clamper holder (B)
	35.	PNW1110	Pressure cam
	36.	PNW1111	Upper tray
	37.	PYY1027	Disc table assembly
	38.	BBZ20P080FMC	Screw
	39.	PXM1002	Motor
	40.	BBZ30P060FMC	Screw
	41.	PCZ30P040FMC	Screw
	42.		.....
	43.	PMZ20P030FMC	Screw
	44.	PPZ30P080FMC	Screw
	45.	WA30F120M100	Washer
	46.	WA31D054D050	Washer
	47.	WT12D032D025	Washer
	48.	WT25D047D025	Washer
	49.	WT31D054D025	Washer
	50.	.....	.....
	51.	CGDYX104M25	Ceramic capacitor
	52.	PBA-209	Screw
	53.	PBH1008	Drive spring
	54.	PBK1010	Spring
	55.	PEB1072	Belt
	56.	PLA1003	Drive screw
	57.	PLA1004	Guide bar
	58.	PNW1062	Chassis
	59.	PNW1063	Carriage plate
	60.	PNW1066	Pully
	61.	PSH1003	Slide switch (INSIDE)
	62.	PXM1001	Spindle motor
	63.	PWY1008	Pick up assembly
	64.	BPZ20P080FZK	Screw
	65.	PMZ20P030FMC	Screw
	101.		Main chassis
	102.		Gear angle (L)
	103.		Gear angle (R)
	104.		Lever
	105.		SM select
	106.		Eject lever
	107.		Drive lever
	108.		Bottom guide
	109.		Sub chassis
	110.		Upper chassis
	111.		Upper guide
	112.		Switch board assembly
	113.		Select board assembly
	114.		Base plate
	115.		Carriage motor board
	116.		Servo mechanism assembly
	117.		Roller



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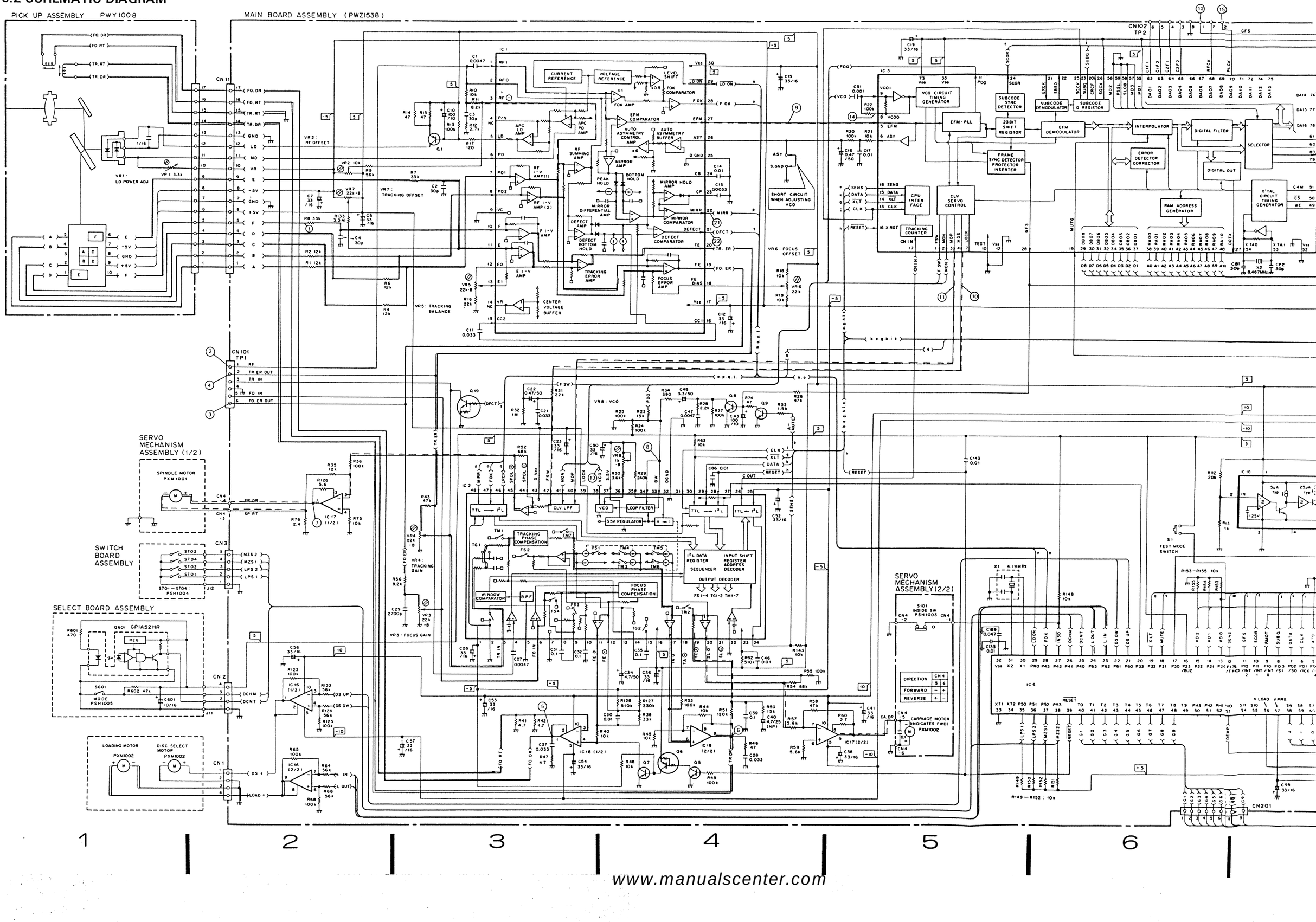
9.2 SCHEMATIC DIAGRAM

NOTE:
1. RESISTORS:
Indicated in Ω, 1/8W & 1/4W, ±5% tolerance unless otherwise noted k; kΩ, M; MΩ, (F); ±1%, (G); ±2%, (K); ±10%, (M); ±20% tolerance

2. CAPACITORS:
Indicated in capacity (μF)/voltage (V) unless otherwise noted p; pF. Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE, CURRENT:
; DC voltage (V) at PLA
mA; DC current at PLAY or STO



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oted
lytic

3. VOLTAGE, CURRENT:
; DC voltage (V) at PLAY state
mA; DC current at PLAY or STOP state

4. OTHERS:
; Signal route.
; Adjusting point.

The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
* marked capacitors and resistors have parts numbers.
The underlined indicates the switch position.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

MAIN BOARD ASSEMBLY

IC1	CXA1081S
IC2	CXA1082BS
IC3	CXD1130QZ
IC4	LH5116-15
IC5	LC7881-C
IC6	PD4150A(μPD75212)
IC10	M51955AL
IC11	NJM78M05FA
IC12	NJM79M05FA

IC16 – IC18	TA8410K
IC24, 25	NJM4558D-D
IC30 – 32	ICP-N10
Q1	2SA1399
Q5, 8, 9, 16, 17	2SC1740S
Q6, 11	DTA124ES
Q7	2SA933S
Q12, 19, 31	DTC124ES
Q13, 14	2SD1302
D10	1SR139-100
D17 – 19, D50	1SS264
D26	WL02ML-6004
S1	PSG-064
VR2	VRTB6VS103
VR3 – VR7	VRTB6VS223
VR8	VRTS6VS102
X1	VSS1014
X2	PSS-012

DC voltage of Semiconductors (at PLAY state)

IC1 CXA1081S

Pin No.	V	Pin No.	V
1	0	16	−3
2	1.3	17	−5
3	0	18	0
4	2.4	19	0
5	2.8	20	0
6	−4.8	21	−4.9
7	0	22	0
8	0	23	−1
9	0	24	−2.1
10	0	25	0
11	0	26	2.5
12	−1.2	27	2.4
13	−0.1	28	5
14	0	29	0
15	−3.1	30	5

IC2 CXA1082BS

Pin No.	V	Pin No.	V
1	−5	25	−5
2	0	26	0
3	0	27	5
4	0	28	5
5	0	29	5
6	0	30	5
7	0	31	5
8	0	32	0
9	0	33	2.5
10	0	34	2.5
11	0.2	35	2.3
12	0	36	2.3
13	0.2	37	3.5
14	0	38	2.4
15	0	39	5
16	5	40	2.5
17	0	41	5
18	0	42	2.5
19	0	43	5
20	0	44	0
21	0	45	0.45
22	0	46	2.5
23	−4.1	47	5
24	5	48	0

IC3 CXD1130QZ

Pin No.	V	Pin No.	V	Pin No.	V	Pin No.	V
1	2.5	26	5	51	2.3	76	2.3
2	5	27	2.5	52	0	77	2.3
3	2.5	28	5	53	2.2	78	1.2
4	2.8	29	1.1	54	2.2	79	2.5
5	2.4	30	1.1	55	5	80	2.5
6	2.5	31	1.1	56	0		
7	5	32	1.1	57	0		
8	2.4	33	5	58	0		
9	2.4	34	1.1	59	0		
10	0	35	1.1	60	1.3		
11	1.8	36	1.1	61	1.3		
12	0	37	1.1	62	0		
13	5	38	2.5	63	0		
14	5	39	2.5	64	0		
15	5	40	2.5	65	0		
16	5	41	2.5	66	0		
17	0	42	1.9	67	0		
18	5	43	2.5	68	2.5		
19	0	44	2.5	69	2.5		
20	5	45	1.9	70	2.3		
21	0	46	2.5	71	5		
22	0	47	2.5	72	0		
23	2.0	48	2.5	73	5		
24	0	49	4.2	74	0		
25	5	50	2.5	75	2.4		

IC4 LH5116-15

Pin No.	V	Pin No.	V
1	1.9	13	1.1
2	2.5	14	1.1
3	2.5	15	1.1
4	1.9	16	1.1
5	2.5	17	1.1
6	2.5	18	2.5
7	2.5	19	2.5
8	2.5	20	2.5
9	1.1	21	4.4
10	1.1	22	2.5
11	1.1	23	2.6
12	0	24	5

IC5 LC7881-C

Pin No.	V	Pin No.	V
1	2.2	11	0
2	4.4	12	0
3	4.4	13	0
4	5.0	14	5.0
5	0	15	0
6	2.6	16	0
7	2.6	17	0
8	2.6	18	0
9	2.5	19	0
10	5.0	20	2.2

IC6 PD4150A

Pin No.	V	Pin No.	V	Pin No.	V
1	−13.4	26	5.0	51	0
2	−17.8	27	5.0	52	5.0
3	−11.95	28	5.0	53	−5.0
4	−12.55	29	0	54	−19.7
5	0	30	2.3	55	−7.4
6	5.0	31	2.5	56	−20.1
7	5.0	32	0	57	−5.0
8	2.0	33	0	58	−22.8
9	5.0	34	5.0	59	−7.8
10	0	35	0	60	−12.7
11	5.0	36	0	61	−4.2
12	5.0	37	0	62	−5.75
13	0	38	5.0	63	−9.6
14	0	39	5.0	64	5.0
15	0	40	−23.3		
16	0	41	−23.3		
17	5.0	42	−23.3		
18	0	43	−23.3		
19	5.0	44	−23.3		
20	5.0	45	−23.3		
21	0	46	−23.3		
22	0	47	−23.0		
23	0	48	−22.9		
24	0	49	−25.3		
25	5.0	50	5.0		

IC16 TA8410K

Pin No.	V
1	0
2	0
3	0
4	0
5	−9.6
6	0
7	0
8	0
9	−0.6
10	9.8

IC17 TA8410K

Pin No.	V
1	−1.05
2	−1.15
3	0
4	0
5	−9.6
6	0
7	0
8	−0.8
9	−0.6
10	9.8

IC18 TA8410K

Pin No.	V
1	−1.1
2	−1.1
3	−0.2
4	−0.2
5	−9.6
6	0
7	0
8	0
9	0
10	9.8

IC10 M51955AL

Pin No.	V
1	5.0
2	1.7
3	0
4	0
5	5.0

IC11 NJM78M05FA

Pin No.	V
+IN 1	9.8
GND 2	0
+OUT 3	5.0

IC12 NJM79M05FA

Pin No.	V
GND 1	0
−IN 2	−9.6
−OUT 3	−5.0

NJM4558D-D

IC24

Pin No.	V
1	2.2
2	2.2
3	2.2
4	−5.0
5	2.2
6	2.2
7	2.2
8	5.0

IC25

Pin No.	V
1	0
2	0
3	0
4	−5.0
5	0
6	0
7	0
8	5.0

Transistors

Q No.	V		
	E	C	B
Q1	3.9	2.0	3.2
Q5	0	0	0.7
Q6	5.0	5.0	0
Q7	0	−0.2	5.0
Q8	0	0	0.7
Q9	0	0.7	−5.0
Q11	5.0	5.0	0
Q12	−5.0	−5.0	5.0
Q13	0	0	−5.0
Q14	0	0	−5.0
Q16	0	0	−5.0
Q17	0	0	−5.0
Q19	0	0	−4.9
Q31	0	0	5.0

Diodes

D No.	V	
	Anode	Cathode
D10	−25.6	1.0
D17	5.0	5.0
D18	0	5.0
D19	5.0	4.8
D25	−9.8	0
D204	−13.5	3.4
D206	−5.65	4.3
D207	−8.0	4.0
D208	−24.2	3.0
D209	−12.65	3.3
D210	−11.8	3.7

Anode → Cathode

To Deck amplifier block Function assembly J1 (To Page 110)

To K
To J
To Deck amplifier block Power supply assembly J1001 (To Page 123)

V201 PEL1022
D204, 206~210 1SS254
S201~207, 216~217, S222~230 : PSG-065

FUNCTION BOARD ASSEMBLY (PWZ1542)

TRANSFORMER BOARD ASSEMBLY

POWER TRANSFORMER T1 PTT1069

FOCUS SERVO LOOP
SIGNAL LINE
TRACKING SERVO LOOP
CARRIAGE SERVO LOOP
LOADING MOTOR
SPINDLE SERVO LOOP

7 8 9 10 11 12

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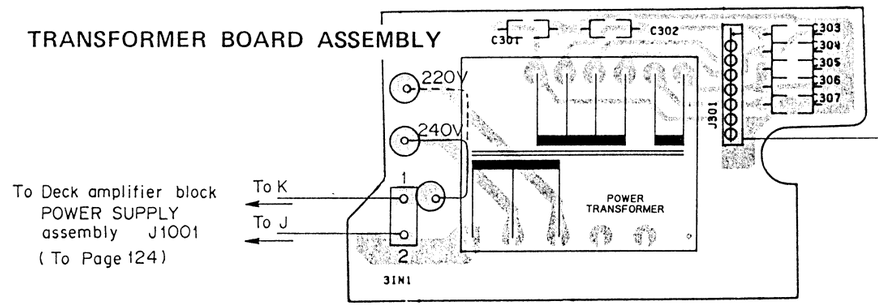
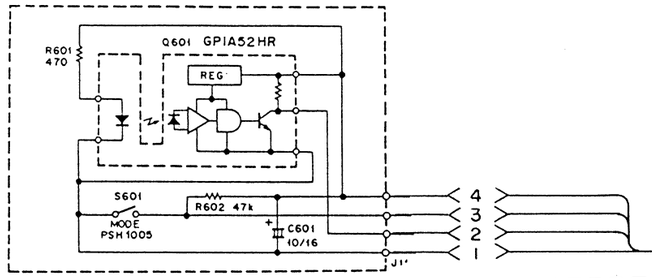
9.3 P.C.BOARDS CONNECTION DIAGRAM

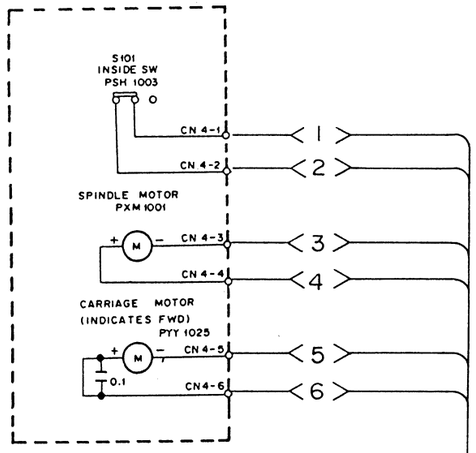
TRANSFORMER BOARD ASSEMBLY

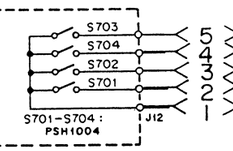


SELECT BOARD ASSEMBLY

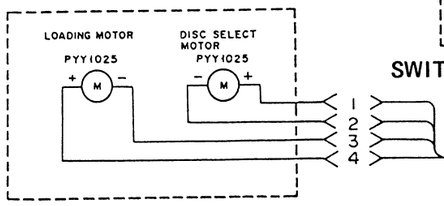


SERVO MECHANISM ASSEMBLY



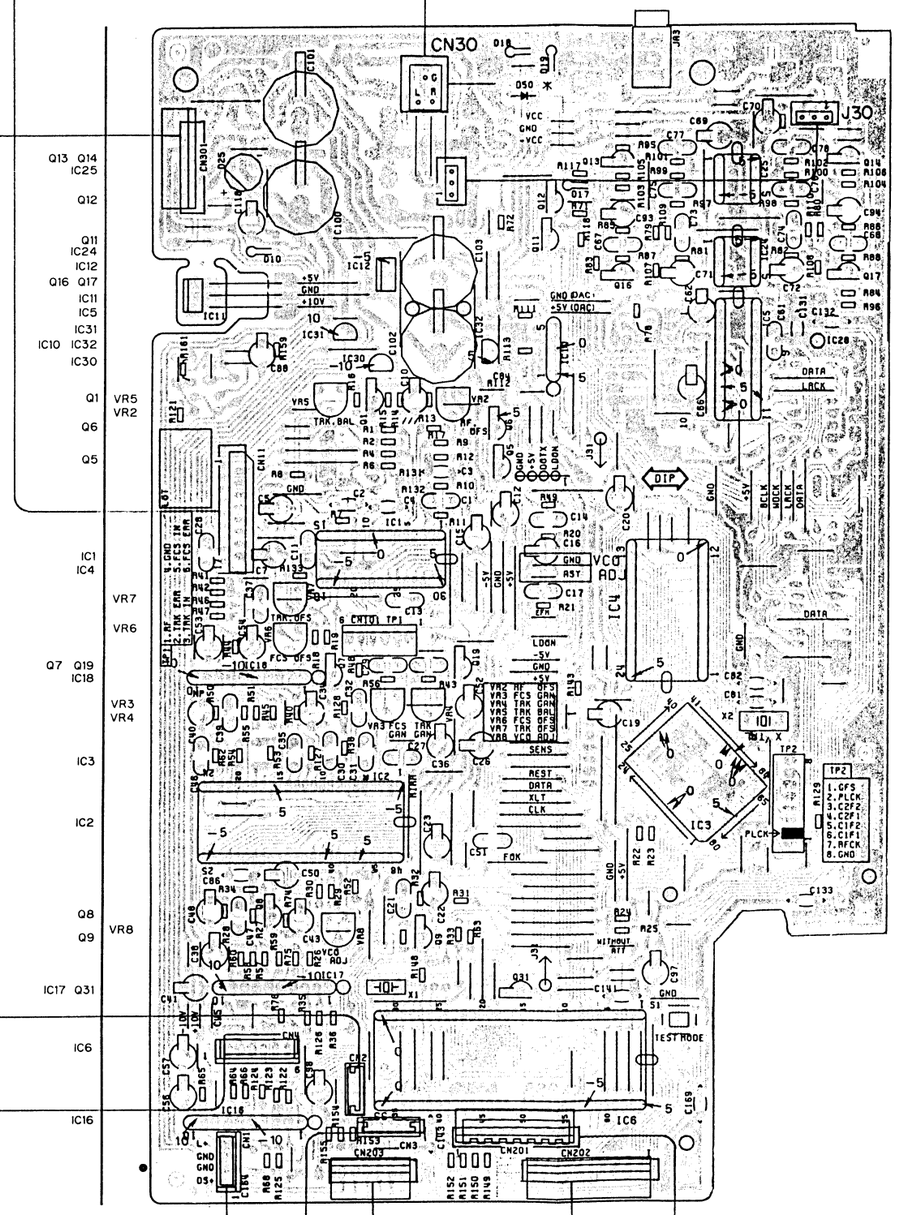


SWITCH BOARD ASSEMBLY

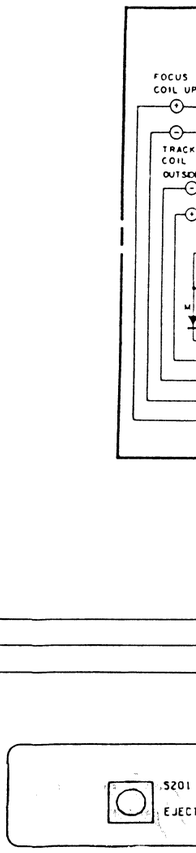


To Deck amplifier block
FUNCTION assembly
J1 (To Page 111)

⚠⊙ MAIN BOARD ASSEMBLY (PWZ1538)



¥R120 is printed on the motherboard instead of D50.



PICK-UP ASS

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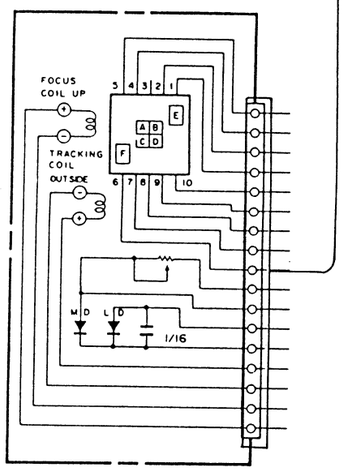
PICK-UP ASSEMBLY (PWY1008)



DC voltage of Semiconductors (at PLAY state)

IC 1 CXA1081S

Pin No.	V	Pin No.	V
1	0	16	−3
2	1.3	17	−5
3	0	18	0
4	2.4	19	0
5	2.8	20	0
6	−4.8	21	−4.9
7	0	22	0
8	0	23	−1
9	0	24	−2.1
10	0	25	0
11	0	26	2.5
12	−1.2	27	2.4
13	−0.1	28	5
14	0	29	0
15	−3.1	30	5

IC 2 CXA1082HS

Pin No.	V	Pin No.	V
1	−5	25	−5
2	0	26	0
3	0	27	5
4	0	28	5
5	0	29	5
6	0	30	5
7	0	31	5
8	0	32	0
9	0	33	2.5
10	0	34	2.5
11	0.2	35	2.3
12	0	36	2.3
13	0.2	37	3.5
14	0	38	2.4
15	0	39	5
16	5	40	2.5
17	0	41	5
18	0	42	2.5
19	0	43	5
20	0	44	0
21	0	45	0.45
22	0	46	2.5
23	−4.1	47	5
24	5	48	0

IC 3 CXD1130QZ

Pin No.	V	Pin No.	V	Pin No.	V	Pin No.	V
1	2.5	26	5	51	2.3	76	2.3
2	5	27	2.5	52	0	77	2.3
3	2.5	28	5	53	2.2	78	1.2
4	2.8	29	1.1	54	2.2	79	2.5
5	2.4	30	1.1	55	5	80	2.5
6	2.5	31	1.1	56	0		
7	5	32	1.1	57	0		
8	2.4	33	5	58	0		
9	2.4	34	1.1	59	0		
10	0	35	1.1	60	1.3		
11	1.8	36	1.1	61	1.3		
12	0	37	1.1	62	0		
13	5	38	2.5	63	0		
14	5	39	2.5	64	0		
15	5	40	2.5	65	0		
16	5	41	2.5	66	0		
17	0	42	1.9	67	0		
18	5	43	2.5	68	2.5		
19	0	44	2.5	69	2.5		
20	5	45	1.9	70	2.3		
21	0	46	2.5	71	5		
22	0	47	2.5	72	0		
23	2.0	48	2.5	73	5		
24	0	49	4.2	74	0		
25	5	50	2.5	75	2.4		

IC 4 LH5116-15

Pin No.	V	Pin No.	V
1	1.9	13	1.1
2	2.5	14	1.1
3	2.5	15	1.1
4	1.9	16	1.1
5	2.5	17	1.1
6	2.5	18	2.5
7	2.5	19	2.5
8	2.5	20	2.5
9	1.1	21	4.4
10	1.1	22	2.5
11	1.1	23	2.5
12	0	24	5

IC 5 LC7881-C

Pin No.	V	Pin No.	V
1	2.2	11	0
2	4.4	12	0
3	4.4	13	0
4	5.0	14	5.0
5	0	15	0
6	2.6	16	0
7	2.6	17	0
8	2.6	18	0
9	2.5	19	0
10	5.0	20	2.2

IC 6 PD4150A

Pin No.	V	Pin No.	V	Pin No.	V
1	−13.4	26	5.0	51	0
2	−17.8	27	5.0	52	5.0
3	−11.95	28	5.0	53	−5.0
4	−12.55	29	0	54	−19.7
5	0	30	2.3	55	−7.4
6	5.0	31	2.5	56	−26.1
7	5.0	32	0	57	−5.0
8	2.0	33	0	58	−22.8
9	5.0	34	5.0	59	−7.8
10	0	35	0	60	−12.7
11	5.0	36	0	61	−4.2
12	5.0	37	0	62	−5.75
13	0	38	5.0	63	−9.6
14	0	39	5.0	64	5.0
15	0	40	−23.3		
16	0	41	−23.3		
17	5.0	42	−23.3		
18	0	43	−23.3		
19	5.0	44	−23.3		
20	5.0	45	−23.3		
21	0	46	−23.3		
22	0	47	−23.0		
23	0	48	−22.9		
24	0	49	−25.3		
25	5.0	50	5.0		

IC 10 M51955AL

Pin No.	V
1	5.0
2	1.7
3	0
4	0
5	5.0

IC 12 NJM79M05FA

Pin No.	V
(GND)1	0
(IN) 2	−9.6
(OUT)3	−5.0

IC 11 NJM78M05FA

Pin No.	V
(IN) 1	9.8
(GND)2	0
(OUT)3	5.0

IC 16 TA8410K

Pin No.	V
1	0
2	0
3	0
4	0
5	−9.6
6	0
7	0
8	0
9	0
10	9.8

IC 17 TA8410K

Pin No.	V
1	−1.05
2	−1.15
3	0
4	0
5	−9.6
6	0
7	0
8	−0.8
9	−0.6
10	9.8

IC 18 TA8410K

Pin No.	V
1	−1.1
2	−1.1
3	−0.2
4	−0.2
5	−9.6
6	0
7	0
8	0
9	0
10	9.8

IC 24 NJM4558D-D

Pin No.	V
1	2.2
2	2.2
3	2.2
4	−5.0
5	2.2
6	2.2
7	2.2
8	5.0

IC 25

Pin No.	V
1	0
2	0
3	0
4	−5.0
5	0
6	0
7	0
8	5.0

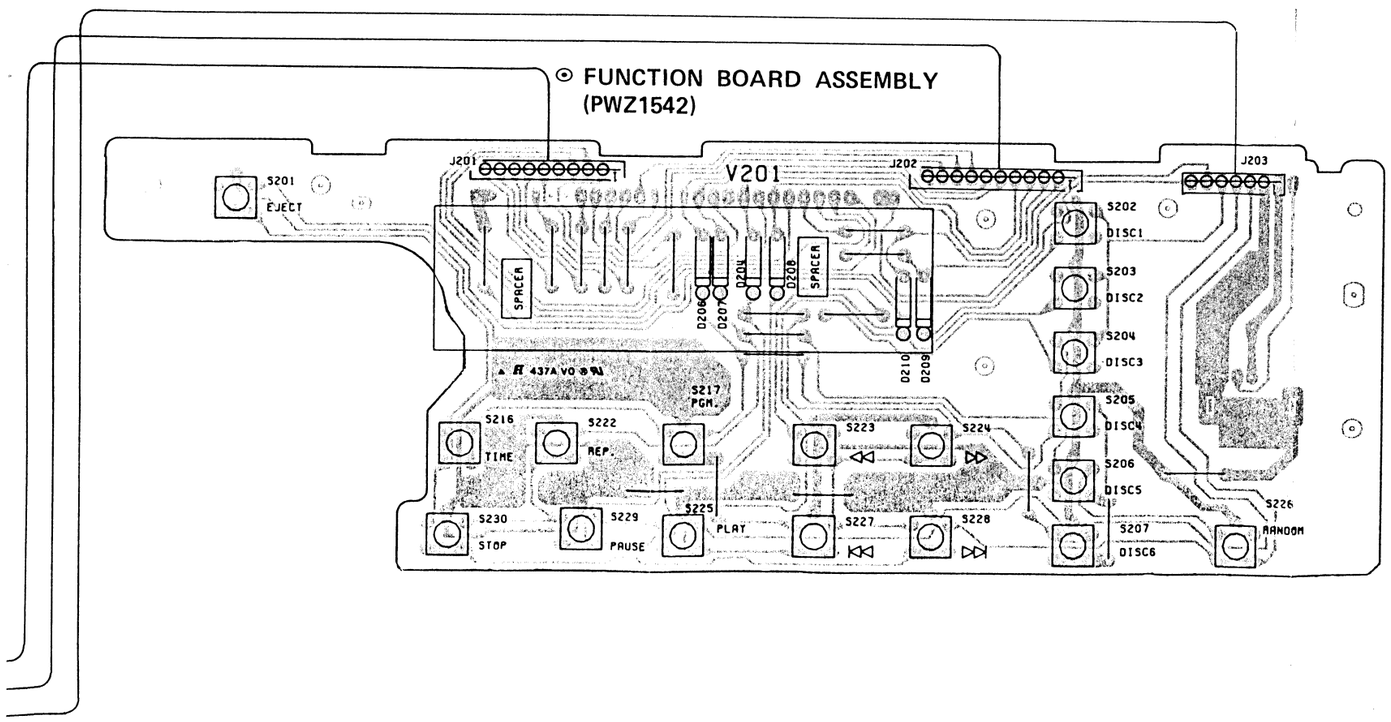
Transistors

Q No.	V		
	E	C	B
Q 1	3.9	2.0	3.2
Q 5	0	0	0.7
Q 6	5.0	5.0	0
Q 7	0	−0.2	5.0
Q 8	0	0	0.7
Q 9	0	0.7	−5.0
Q 11	5.0	5.0	0
Q 12	−5.0	−5.0	5.0
Q 13	0	0	−5.0
Q 14	0	0	−5.0
Q 16	0	0	−5.0
Q 17	0	0	−5.0
Q 19	0	0	−4.9
Q 31	0	0	5.0

Diodes

D No.	V	
	Anode	Cathode
D 10	−25.6	1.0
D 17	5.0	5.0
D 18	0	5.0
D 19	5.0	4.8
D 25	−9.8	0
D 204	−13.5	3.4
D 205	−8.65	4.3
D 207	−8.0	4.0
D 208	−24.2	3.0
D 209	−12.65	3.3
D 210	−11.8	3.7

Anode ⊣▷⊢ Cathode



P.C.B. pattern diagram indication	Corresponding part symbol	Part name	P.C.B. pattern diagram indication	Corresponding part symbol	Part name
	C E B or C E B	Transistor			Ceramic capacitor
D S G	D S G or D S G	FET			Mylar capacitor
			SA		Styrol capacitor
		Diode	NP		Electrolytic capacitor (Non polarized)
			NL		Electrolytic capacitor (Noiseless)
		Zenner diode			Electrolytic capacitor (Polarized)
					Electrolytic capacitor (Polarized)
		LED			Power capacitor
		Varactor			Semi-fixed resistor
		Tact switch			Resistor array
					Resistor
		Inductor			
		Coil			Resonator
		Transformer			Thermistor
		Filter			

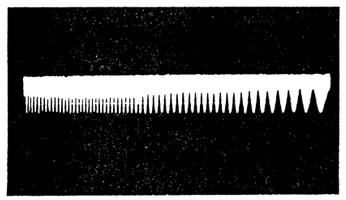
1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with ▭ shows negative terminal.
4. The diode marked with O shows cathode side.
5. The transistor terminal marked with ▭ shows emitter.

WAVEFORMS

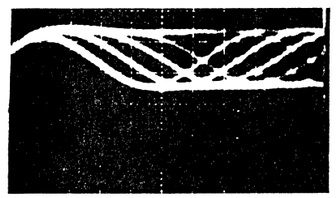
NOTE: The encircled numbers denote measuring points in the circuit and pattern diagrams.

① CN11-5 Pin : PLAY MODE
100mV/div 5m sec/div

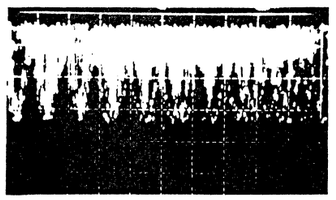
① CN11-5 Pin: SEARCH MODE
100mV/div 5m sec/div



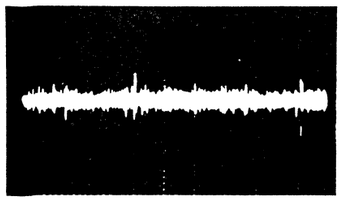
② TP1-1 Pin: PLAY
1V/div 200n sec/div



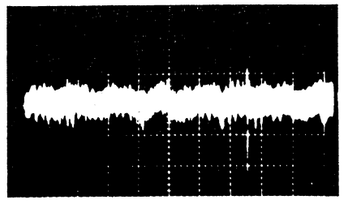
② TP1-1 Pin: SEARCH
500mV/div 5m sec/div



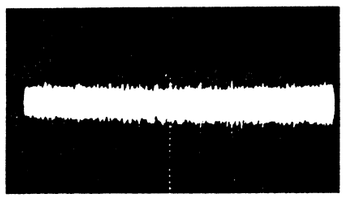
③ TP1-6 Pin: PLAY
500mV/div 10m sec/div



③ TP1-6 Pin: SEARCH
500mV/div 10mS/div

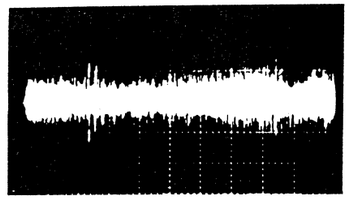


④ TP1-2 Pin: PLAY
1V/div 10mS/div



④ TP1-2 Pin: SEARCH
1V/div 10mS/div

⑤ IC18-1 : PLAY Y
0.2V/div 10mS/div

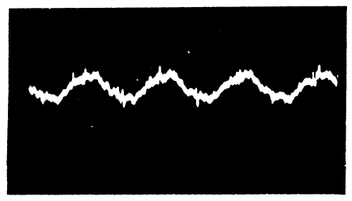


⑤ IC18-1 : PLAY
0.2V/div 10mS/div

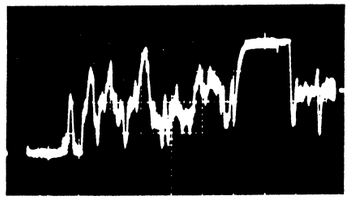
⑥ IC18-9 : PLAY
0.2V/div 10mS/div

⑥ IC18-9 : PLAY
0.2V/div 10mS/div

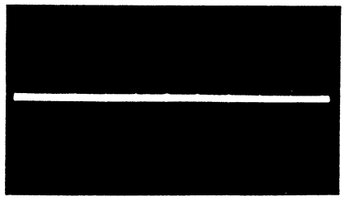
⑦ IC17-1 : PLAY
2V/div 50mS/div



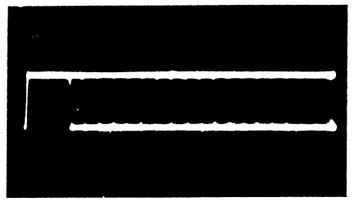
⑦ IC17-1 : SEARCH
2V/div 100mS/div



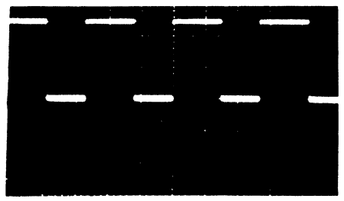
⑧ IC2,33,34 Pin : PLAY
2V/div 10mS/div



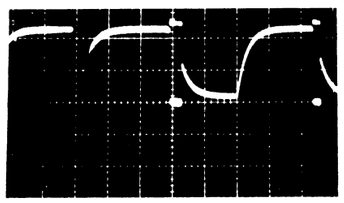
⑨ IC1 27 Pin: PLAY
2V/div 500μsec/div



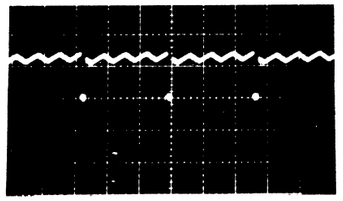
⑩ IC3-4: PLAY
2V/div 50μS/div



⑩ IC3-4: SEARCH
2V/div 100mS/div

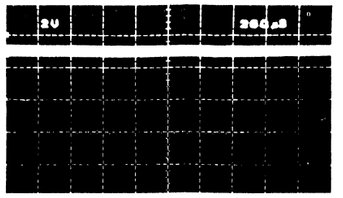


⑪ IC3-3: PLAY
2V/div 200μS/div

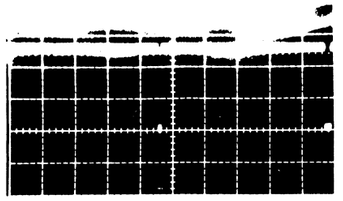


⑪ IC3-3: SEARCH
2V/div 10mS/div

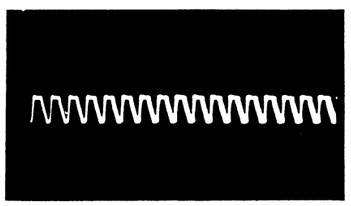
⑫ TP2-1: PLAY
2V/div 200μS/div



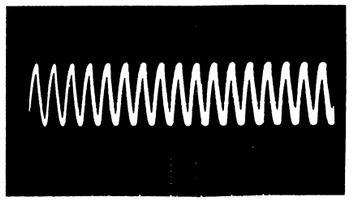
⑫ TP2-1: SEARCH
2V/div 20mS/div



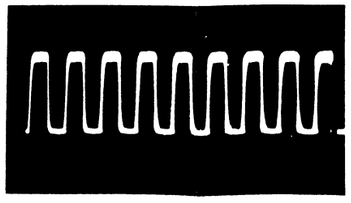
⑬ IC2-38: PLAY
2V/div 200nS/div



⑭ IC3-8: PLAY
2V/div 200nS/div

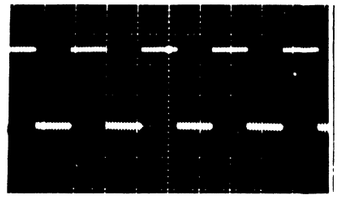


⑮ TP2-2: PLAY
2V/div 200nS/div

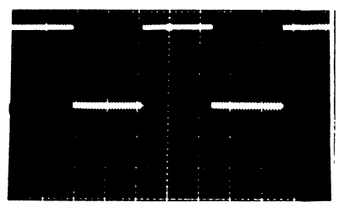


⑯ IC3-76: STOP
2V/div 200nS/div

⑰ IC3-79: STOP
2V/div 5μS/div



⑱ IC3-80: STOP
2V/div 5μS/div

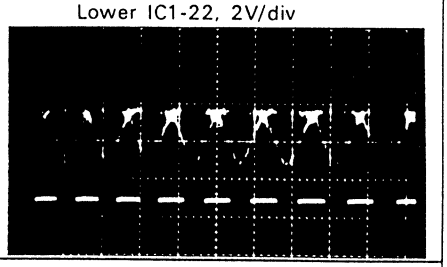


(21) IC1-22: TR OPEN

1mS/div

Upper TP1-1, 1V/div

Lower IC1-22, 2V/div

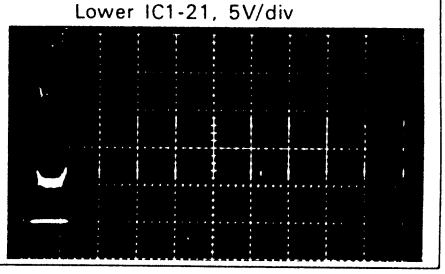


(22) IC1-21: DFCT

1mS/div

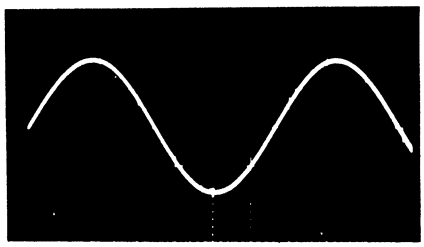
Upper TP1-1, 1V/div

Lower IC1-21, 5V/div



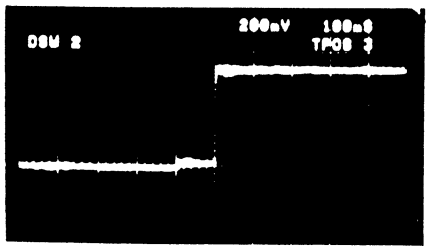
(19) OUTPUT Lch: PLAY

2V/div 50μS/div



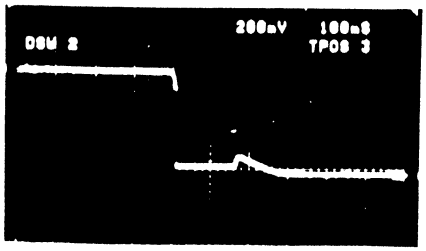
(20) IC10-5: POWER ON

2V/div 100mS/div



(20) IC10-5: POWER-OFF

2V/div 100mS/div



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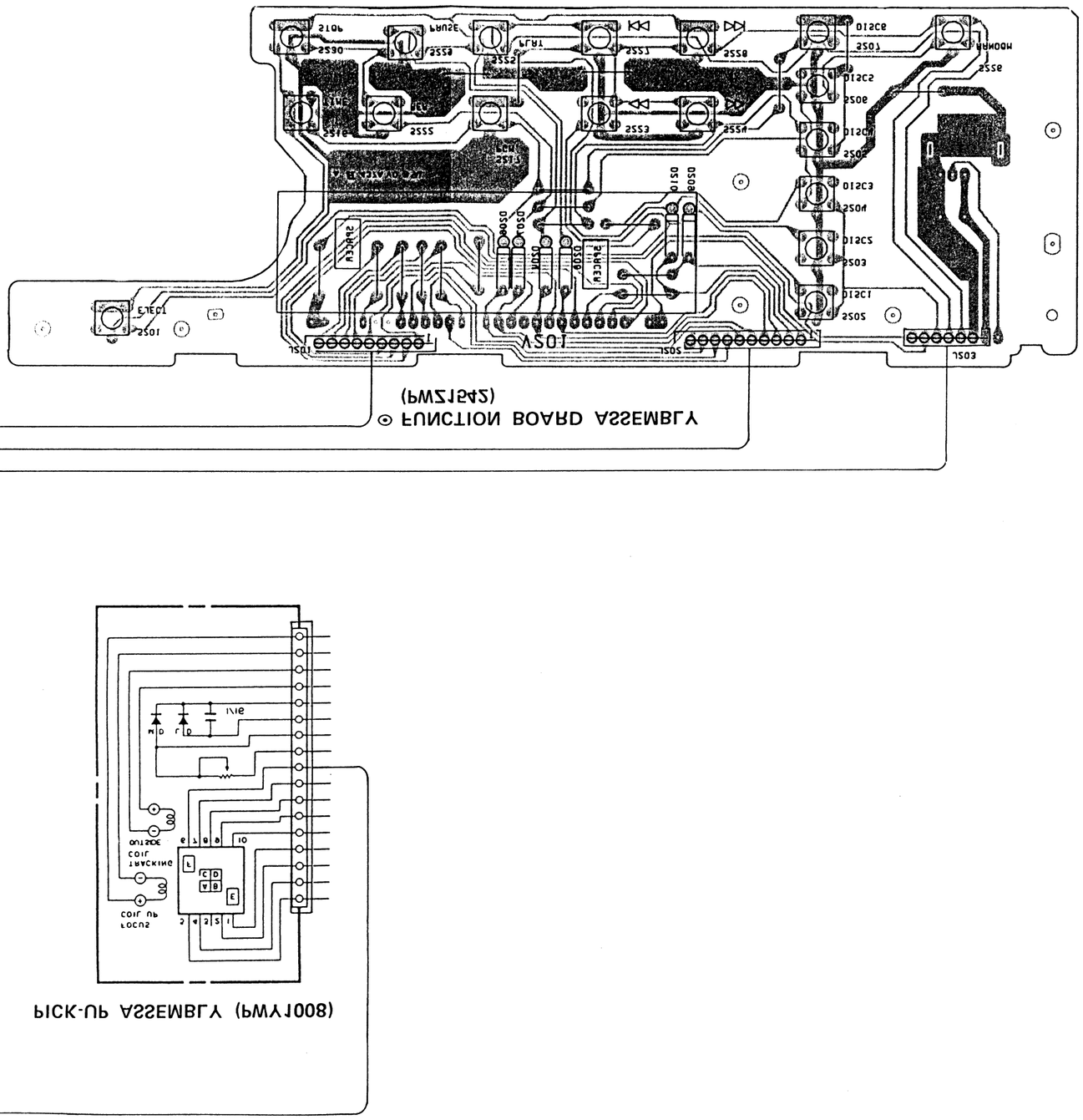
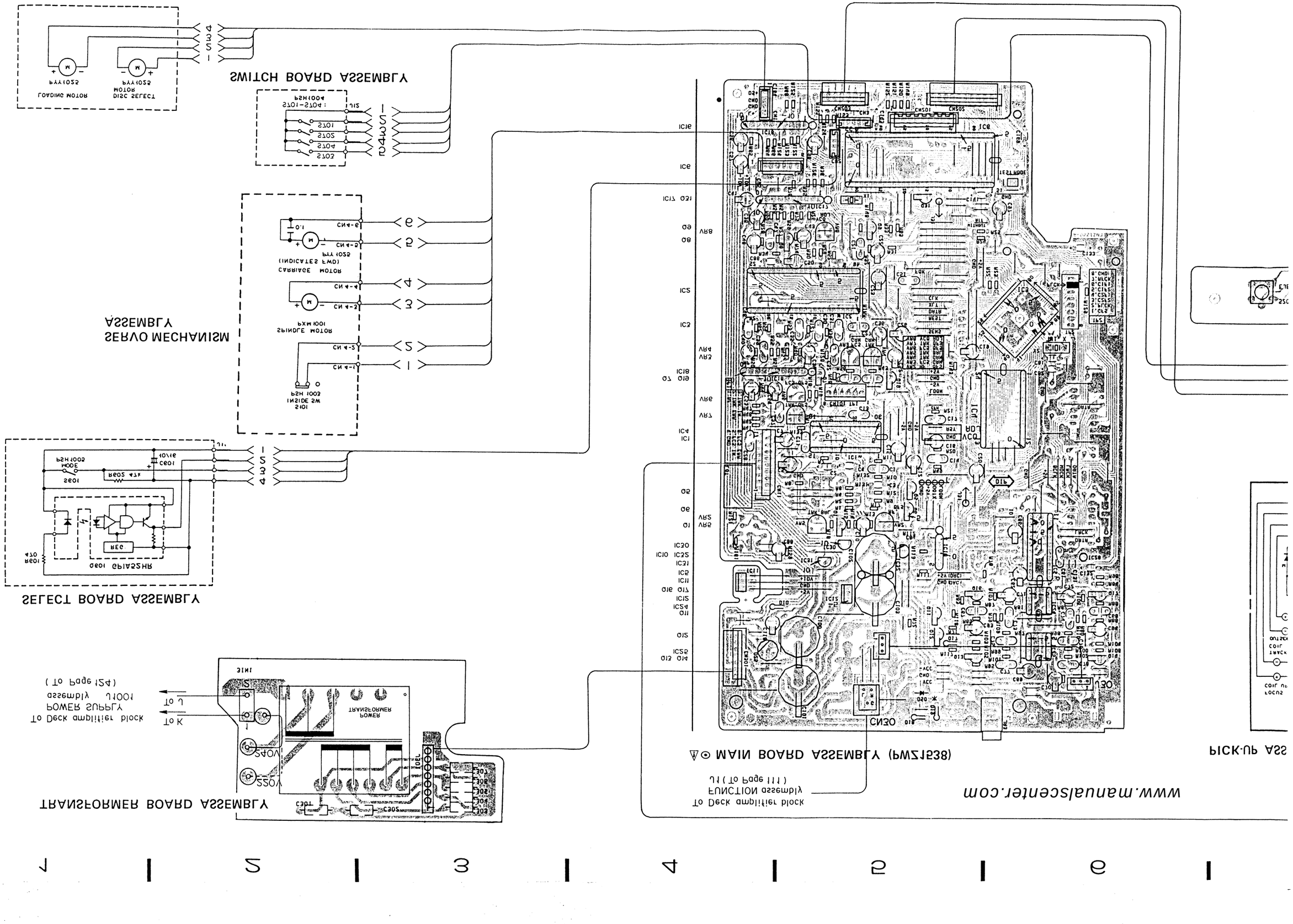


NOTE:
This picture shows the foil side of the printed circuit.


SWITCH BOARD ASSEMBLY
SERVO MECHANISM ASSEMBLY
SELECT BOARD ASSEMBLY
TRANSFORMER BOARD ASSEMBLY
MAIN BOARD ASSEMBLY (PWZ1238)
PICK-UP ASS
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9.4 ELECTRICAL PARTS LIST

NOTES:

- *Parts without part number cannot be supplied.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω	*56 × 10¹*	*561*	*RD1/4PS 5 6 1 J*
47kΩ	*47 × 10³*	*473*	*RD1/4PS 4 7 3 J*
0.5Ω	*0R5*		*RN2H 0 R 5 K*
1Ω	*010*		*RS1P 0 1 0 K*

Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	*562 × 10¹*	*5621*	*RN1/4SR 5 6 2 1 F*

Miscellaneous Parts

P.C. BOARD ASSEMBLIES

Mark	Symbol & Description	Part No.
⚠ ◉	Main board assembly	PWZ1538
◉	Function board assembly	PWZ1542
	Transformer board assembly	
	Switch board assembly	
	Select board assembly	

OTHERS

Mark	Symbol & Description	Part No.
	Pick-up assembly	PWY1008
⚠	Power transformer	PTT1069
	Motor assembly (DISC SELECT, DISC LOADING, CARRIAGE)	PYY1025
	Motor (DISC SELECT, DISC LOADING, CARRIAGE)	PXM1002
	Spindle motor	PXM1001
	Slide switch (INSIDE SW)	PSH1003

◉Main Board Assembly (PWZ1538)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	IC1	CXA1081S
	IC2	CXA1082BS
	IC3	CXD1130Q
⚠	IC30–IC32	ICP-N10
	IC5	LC7881–C
	IC4	LH5116-15
	IC10	M51955AL
	IC24, IC25	NJM4558D–D
⚠	IC11	NJM78M05FA
⚠	IC12	NJM79M05FA
	IC6	PD4150A
⚠	IC16–IC18	TA8410K
	Q6, Q11	DTA124ES
	Q12, Q19, Q31	DTC124ES
	Q1	2SA1399
	Q7	2SA933S
	Q5, Q8, Q9, Q16, Q17	2SC1740S
	Q13, Q14	2SD1302
⚠	D25	WL02ML-5004
⚠	D10	1SR139-100
⚠	D17–D19, D50	1SS254

SWITCH

Mark	Symbol & Description		Part No.
	S1	Tact switch	PSG-064

Mark	Symbol & Description	Part No.
	C2–C4, C81, C82	CCCCH300J50
	C40	CEANP4R7M25
	C16, C22	CEASR47M50
	C10, C43, C62	CEAS101M10
	C88	CEAS101M35
	C71, C72, C93, C94	CEAS220M16
	C100, C101	CEAS222M16
	C118	CEAS220M35
	C48	CEAS3R3M50
	C5, C7, C12, C15, C19, C20, C23, C26, C36, C38, C41, C50, C52–C54, C56, C57, C66, C69, C70, C97, C98	CEAS330M16
	C34	CEAS4R7M50
	C102, C103	CEAS471M10
	C61, C86, C131–C133, C141, C143	CKCYF103Z50
	C169	CKCYF473Z50
	C30, C51	CQMA102K50
	C14, C17, C46	CQMA103K50
	C31, C32, C35, C39	CQMA104K50
	C29	CQMA272J50
	C13	CQMA332J50
	C11, C21, C28, C37	CQMA333K50
	C77, C78	CQMA471J50
	C1, C27, C47	CQMA472J50
	C75, C76	CQMA561J50
	C73, C74	CQMA562J50
	C67, C68	CQMA683J50

RESISTOR

Mark	Symbol & Description		Part No.
	VR2	Semi-fixed resistor (10kΩ)	VRTB6VS103
	VR3–VR7	Semi-fixed resistor (22kΩ)	VRTB6VS223
	VR8	Semi-fixed resistor (1kΩ)	VRTS6VS102
	R30	Metal film resistor	RN1/6PQ3601F
		Other resistors	RD1/6PM□□□J

OTHERS

Mark	Symbol & Description		Part No.
	JA3	Remote control jack	RKN1004
	X2	Crystal resonator	PSS-012
	X1	Ceramic resonator	VSS1014

◉Function Board Assembly (PWZ1542)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	D204, D206–D210	1SS254

SWITCHES

Mark	Symbol & Description	Part No.
	S201–S207, S216, S217, S222–S230 Tact switch	PSG-065

OTHERS

Mark	Symbol & Description		Part No.
	V201	Fluorescent indicator tube	PEL1022

Transformer Board Assembly

CAPACITORS

Mark	Symbol & Description	Part No.
	C301, C303	CKPYF103Z50
	C302, C304–C307	CKPYX103N25

Switch Board Assembly

SWITCHES

Mark	Symbol & Description		Part No.
	S701–S704	Slide switch (LOADING POSITION, MAGAZINE)	PSH1004

Select Board Assembly

SEMICONDUCTOR

Mark	Symbol & Description	Part No.
	Q601	GP1A52HR

SWITCH

Mark	Symbol & Description		Part No.
	S601	Slide switch (MODE)	PSH1005

CAPACITOR

Mark	Symbol & Description	Part No.
	C601	CEAL100M16

RESISTORS

Mark	Symbol & Description	Part No.
	All resistors	RD1/6PM□□□J

Mark	Symbol & Description		Part No.
	C14, C17, C46		CQMA103K50
	C31, C32, C35, C39		CQMA104K50
	C29		CQMA272J50
	C13		CQMA332J50
	C11, C21, C28, C37		CQMA333K50
	C77, C78		CQMA471J50
	C1, C27, C47		CQMA472J50
	C75, C76		CQMA561J50
	C73, C74		CQMA562J50
	C67, C68		CQMA683J50

RESISTOR

Mark	Symbol & Description		Part No.
	VR2	Semi-fixed resistor (10kΩ)	VRTB6VS103
	VR3–VR7	Semi-fixed resistor (22kΩ)	VRTB6VS223
	VR8	Semi-fixed resistor (1kΩ)	VRTS6VS102
	R30	Metal film resistor	RN1/6PQ3601F
		Other resistors	RD1/6PM□□□J

OTHERS

Mark	Symbol & Description		Part No.
	JA3	Remote control jack	RKN1004
	X2	Crystal resonator	PSS-012
	X1	Ceramic resonator	VSS1014

⊙Function Board Assembly (PWZ1542)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	D204, D206–D210	1SS254

SWITCHES

Mark	Symbol & Description	Part No.
	S201–S207, S216, S217, S222–S230 Tact switch	PSG-065

OTHERS

Mark	Symbol & Description		Part No.
	V201	Fluorescent indicator tube	PEL1022

Transformer Board Assembly

CAPACITORS

Mark	Symbol & Description	Part No.
	C301, C303	CKPYF103Z50
	C302, C304–C307	CKPYX103N25

Switch Board Assembly

SWITCHES

Mark	Symbol & Description		Part No.
	S701–S704	Slide switch (LOADING POSITION, MAGAZINE)	PSH1004

Select Board Assembly

SEMICONDUCTOR

Mark	Symbol & Description	Part No.
	Q601	GP1A52HR

SWITCH

Mark	Symbol & Description		Part No.
	S601	Slide switch (MODE)	PSH1005

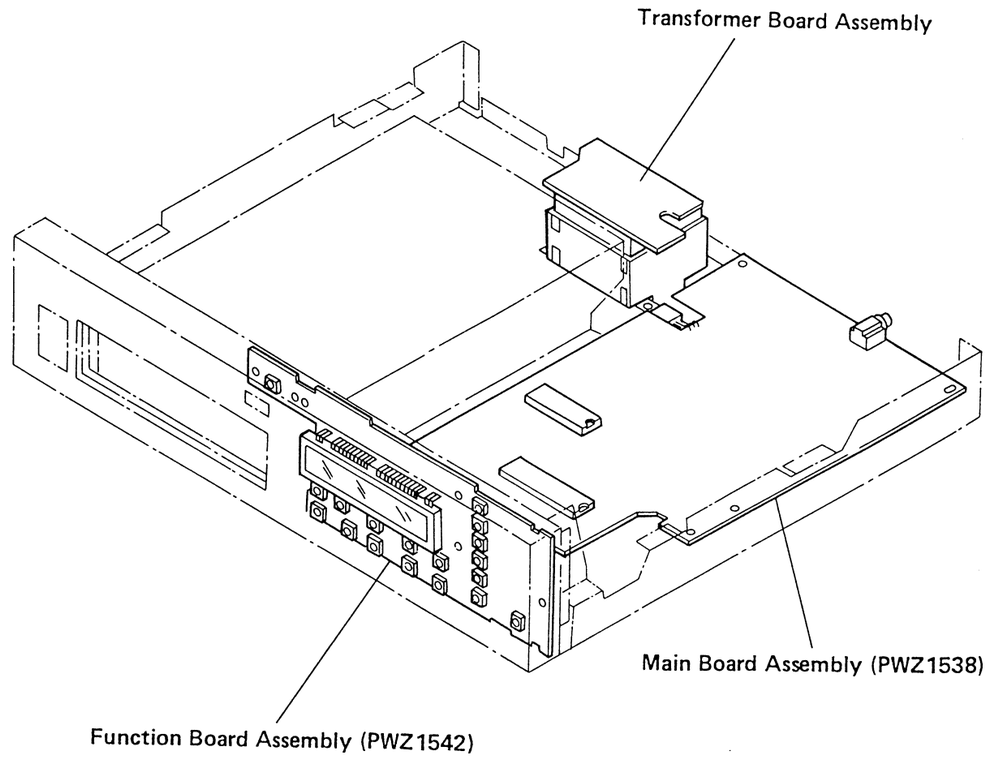
CAPACITOR

Mark	Symbol & Description	Part No.
	C601	CEAL100M16

RESISTORS

Mark	Symbol & Description	Part No.
	All resistors	RD1/6PM□□□J

9.5 P.C.BOARDS LOCATION



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9.6 ADJUSTMENTS

The adjustment items of this model should be performed in the order as shown below.

• Adjustment and check Items

1. Tracking offset. focus offset and RF offset adjustments
2. RF level adjustment
3. LD (Laser Diode) output power confirmation
4. Focus lock and spindle lock confirmation
5. Grating adjustment
6. Tracking balance adjustment
7. Tangential adjustment
8. Focus gain adjustment
9. Tracking gain adjustment
10. VCO free-run frequency adjustment
11. Method to confirm S character (FOCUS ERROR)

• Measuring Equipment

1. Dual trace oscilloscope
2. Laser power meter
3. Test disc (YEDS7)
4. Tracking balance adjustment filter
5. Loop gain adjustment filter
6. Signal generator
7. Frequency counter
8. Other general tools

• Test Mode

Test Mode setting and cancellation procedures

(1) To set the Test Mode, turn the POWER switch of this system (S707) ON pushing the TEST MODE SWITCH (S1).
(2) To canacel the Test Mode, simply turn the POWER switch of the player OFF.

The various key functions in the Test Mode are listed in Table 9-1.

• Adjusting Points

VR1: Laser power
VR7: Tracking offset (TRK.OFS)
VR3: Focus gain (FCS.GAN)
VR4: Tracking gain (TRK.GAN)
VR5: Tracking balance (TRK.BAL)
VR6: Focus offset (FCS.OFS)
VR8: VCO adjustment (VCO.ADJ)
VR2: RF offset (RF.OFS)

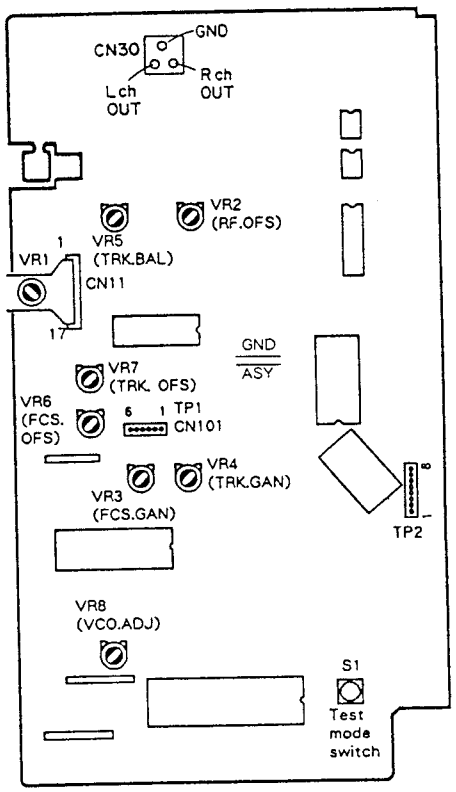
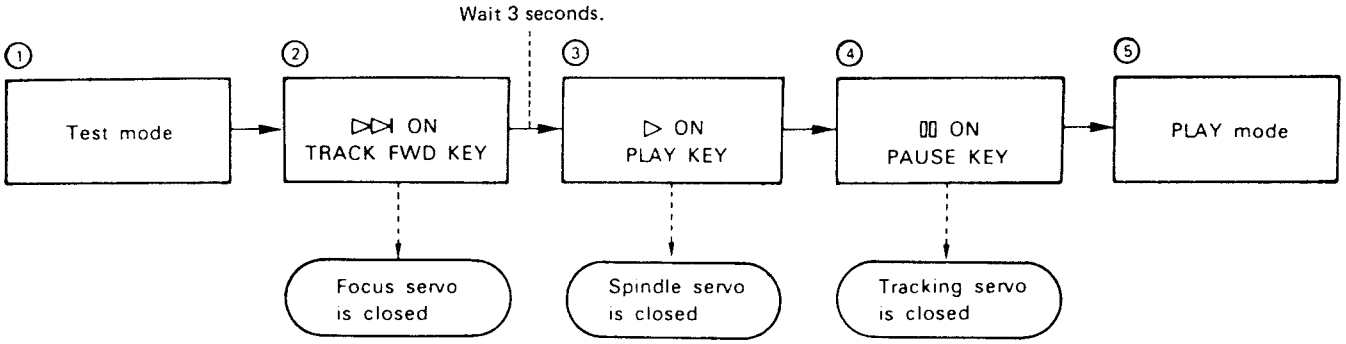


Fig. 9-1 Adjusting point

In the Test Mode, each servo circuit can be closed and opened by separate operations. Consequently, each servo must be closed one at a time (in serial sequence) to set PLAY mode.
Note that PLAY mode is not activated by simply pressing the PAUSE key (⏸) in the Test Mode.

Example: Switching from STOP to PLAY mode.

* The each servo mechanisms operate in a serial sequence in the Test Mode.



• Key Functions in Test Mode

Symbol	Key name	Function during test mode	Description
⏭	TRACK FWD	Focus servo is closed.	Laser diode lights up. Actuator is moved up/down, then focus servo is closed.
▷	PLAY	Spindle servo is closed.	Spindle starts to rotate and the servo is closed when it turns into the CLV-A servo mode.
⏸	PAUSE	Tracking servo is closed/opened.	Performs toggle operation. Closing the tracking servo and becomes PLAY mode by depressing the key (Focus servo and spindle servo must be closing), and PAUSE indicator lights up. Tracking servo opens by depressing the key again.
⏮	MANUAL SEARCH REV	Carriage moves in reverse direction. (towards disc center)	Carriage is moved towards disc center at a fast speed of about 3 cm/sec. Since there is no safety mechanism to stop the carriage, release the key when the carriage reaches the end.
⏭	MANUAL SEARCH FWD	Carriage moves in forward direction. (towards disc end)	Carriage is moved towards disc end at a fast speed of about 3 cm/sec. Since there is no safety mechanism to stop the carriage, release the key when the carriage reaches the end.
⏹	STOP	STOP	All servos are opened.
⏏	EJECT	(CD Magazine) EJECT	CD Magazine is ejected. However, pickup does not return to the park position. Moreover, even when disc is closed the pickup remains as is.

Table 9-1

Step No.	Oscilloscope Setting V	Oscilloscope Setting H	Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
1	TRACKING OFFSET, FOCUS OFFSET AND RF OFFSET ADJUSTMENT					
			TP1 PIN 2 (TRK.ERR) TP1 PIN 6 (FCS.ERR) TP1 PIN 1 (RF OUTPUT)	VR5 (TRK.BAL) VR7 (TRK.OFS) VR6 (FCS.OFS) VR2 (RF.OFS)	45° 0V±50 mV FOCUS offset 0V±50 mV RF offset 100 mV±50 mV	• Set to TEST mode. (See page 47.) • Turn VR5 TRK.BAL (Tracking balance) volume clockwise 45° from the center. • Adjust with VR7 TRK OFS (Tracking offset) volume so that the voltage of pin 2 TRK.ERR (Tracking error) of TP1 becomes 0V±50 mV. • Adjust VR6 FCS.OFS (focus offset) so that the FCS.ERR (focus error) voltage at TP1 pin 6 becomes 0V±50 mV. • Adjust VR2 RF.OFS (RF offset) so that the RF output voltage at TP1 PIN 1 becomes 100 mV±50 mV.
2	RF LEVEL ADJUSTMENT					
			TP1 Pin 1 (RF)	VR1 Laser power	1.5Vp-p $^{+0.2}_{-0}$ V	• Set to TEST mode. (See page 47.) • Play TEST disc and connect probe of an oscilloscope to pin 1 RF (RF output) of TP1 and measure the P-P voltage of RF waveform. • Adjust VR1 (Laser power) so that the value is within 1.5Vp-p $^{+0.2}_{-0}$ V.
3	LD (LASER DIODE) OUTPUT POWER CONFIRMATION					
					Confirmation: less than 0.13 mW	• Set to TEST mode. (See page 47.) • Press TRACK FWD key (▷▷|) and turn ON LD (laser diode). • Place sensor of the laser power meter immediately above the object lens and confirm that the output power of the LD is less than 0.13 mW.
4	FOCUS LOCK AND SPINDLE LOCK CONFIRMATION					
	0.5V/div	100 msec/div	TP1 Pin 1 (RF output)		RF output exists Normal rotation	• Set TEST disc. • Set to TEST mode. (See page 47.) • Shift the pickup close to the center of the disc by pressing the MANUAL SEARCH FWD key (▷▷). * Note that this step must be performed. • Observe pin 1 RF (RF output) of TP1 with an oscilloscope and confirm that the RF signal is output after pressing the TRACK FWD key (▷▷|). • Press PLAY key (▷) and be sure that the disc rotates in normal direction at almost the specified speed (as it is close to the center of the disc, the rotating speed is around 30 rpm) and not rotates abnormally or inversely.

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Step No.	Oscilloscope Setting V	Oscilloscope Setting H	Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
5	**GRATING ADJUSTMENT**					
						• Set to TEST mode. (See page 47.) • Shift the pickup close to the center of the disc by pressing MANUAL SEARCH FWD key (▷▷) so that the grating adjustment screw of the pickup can be seen through the oval hole of the upper side of the servo mechanism. • Insert the (–) screwdriver into the adjusting hole from the upper side of the mechanism as shown in Fig. 9-2, and confirm that the grating screw turns. • Press TRACK FWD key (▷▷|) and PLAY key (▷) sequentially and close the focus servo and spindle servo. (Do not close the tracking servo.) • Observe the waveform of pin 2 TRK.ERR (Tracking error) of TP1 with an oscilloscope. At this point, insert a 4 kHz cutoff low-pass filter. (Fig. 9-3)
	0.5V/div	5 ms/div	TP1 Pin 2 TRK.ERR	Grating Grating	Null point Maximum amplitude	• Turn the (–) screwdriver and find null point. (Photo. 9-1) • Then, turn slowly the (–) screwdriver **counterclockwise** from the null point and adjust at the point where the waveform (Tracking error signal) firstly becomes maximum amplitude. (See Photo. 9-3.) Note: If the (–) screwdriver is pressed strongly, the pickup moves toward disc center, accordingly adjustment becomes difficult. • Finally, be sure to confirm that the tracking error signal (at this time, 4 kHz of cutoff low-pass filter is not inserted) when the pickup is moved toward the disc center and the P-P voltage of the tracking error signal at the outer circumference of the disc are not varied greatly. When the level is deviated over ±10%, adjust again by turning grating screw to the maximum error amplitude point.

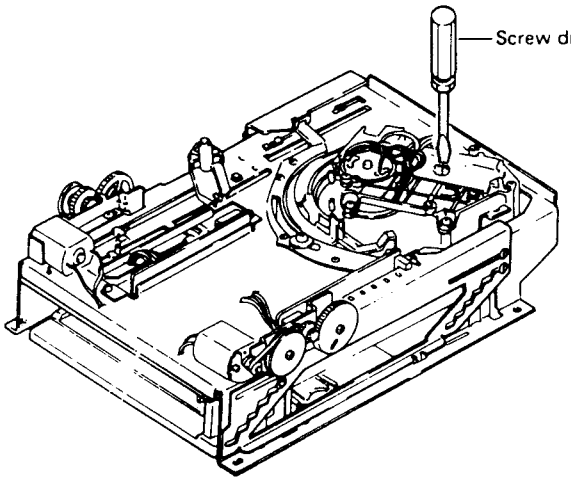

Fig. 9-2

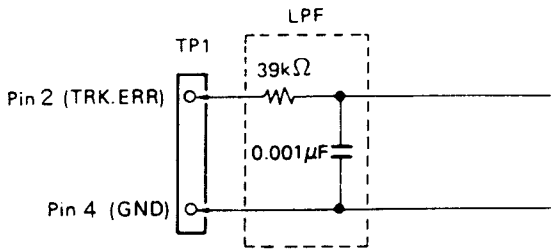

Fig. 9-3

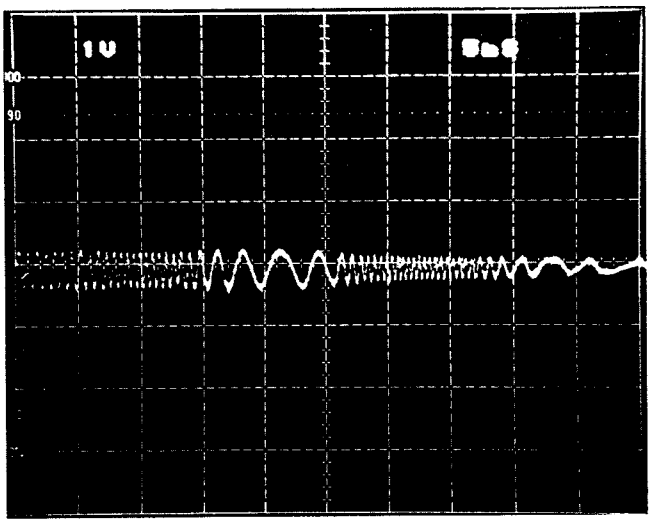

Photo. 9-1 Null point

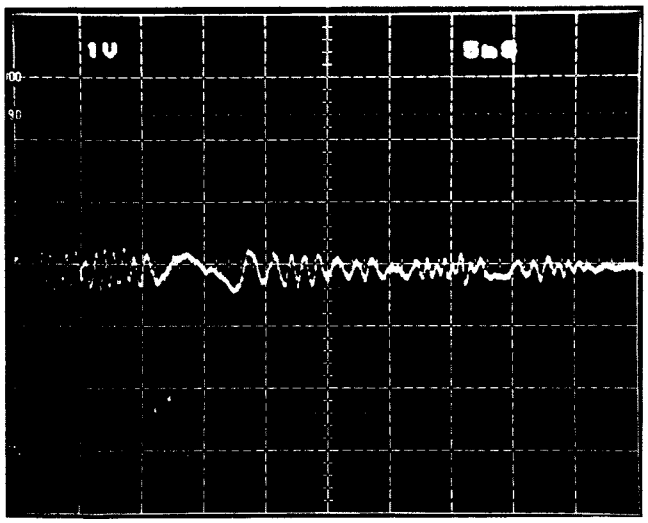

Photo. 9-2 Waveform of not null point

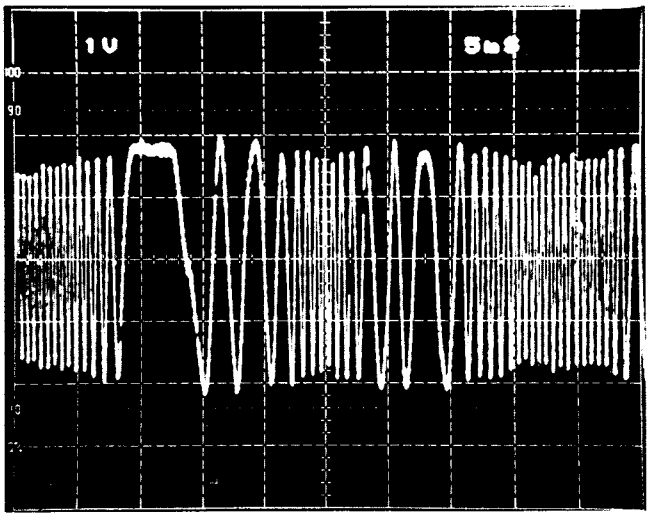

Photo. 9-3 Maximum amplitude

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Step No.	Oscilloscope Setting V	Oscilloscope Setting H	Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
6	TRACKING BALANCE ADJUSTMENT					
	0.5V/div	5 msec /div	TP1 Pin 2 (TRK.ERR)	VR5 (TRK.BAL)	(TRK.ERR)	• Set the TEST disc. • Set to TEST mode. (See page 47.) • Shift the carriage close to the center of the disc by pressing MANUAL SEARCH FWD key (▷▷). • Press TRACK FWD key (▷▷|), and PLAY key (▷) to start turning the disc. • Observe pin 2 TRK.ERR (Tracking error) of TP1 with an oscilloscope and adjust with VR5 TRK.BAL (Tracking balance) volume so that the DC component of the tracking error disappears. Note: Before proceeding with the above adjustments, be sure to adjust the tracking error offset.

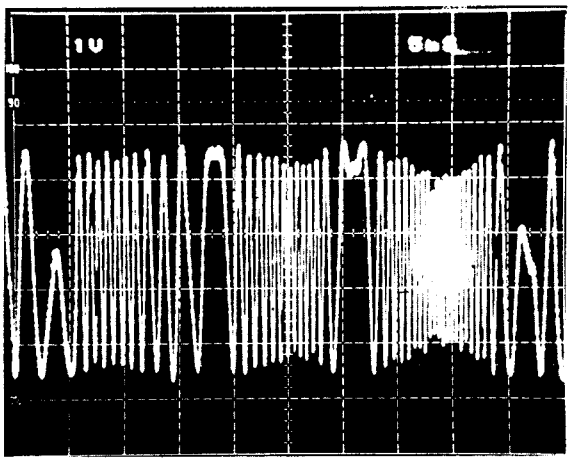

Photo. 9-4 DC component exists

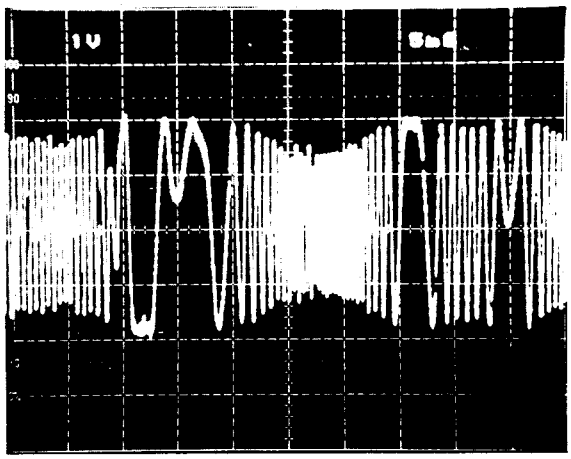

Photo. 9-5 DC component not exist

Step No.	Oscilloscope Setting V	Oscilloscope Setting H	Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
7	TANGENTIAL ADJUSTMENT					
		200nS	TP1 Pin 1 (RF output)	Tangential adjustment screw	Best eye pattern	• Set the TEST disc. • Set to TEST mode. (See page 47.) • Shift the pickup close to the center of the disc by pressing MANUAL SEARCH FWD key (▷▷). • Press TRACK FWD key (▷▷|), PLAY key (▷) and PAUSE key (⏸) sequentially, and close all the servos. (Pause indicator lights up.) • Observe pin 1 RF (RF output) of TP1 with an oscilloscope and adjust with the tangential screw so that the eye pattern becomes clear. (Fig. 9-4) • The adjusting point is the middle point between the point where the eye pattern becomes deteriorate by turning the tangential screw clockwise and the point where the eye pattern becomes deteriorate by turning the tangential screw counterclockwise. As a criterion, observe that the overall waveform is clear and one of the diamond shapes within the eye pattern (Photo. 9-6), and adjust at as an optimum point where the diamond shape is seen relatively fine line.

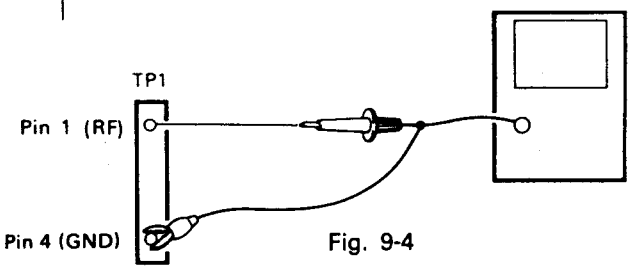

Fig. 9-4

Note: During the adjustment, hold hexagonal wrench to upward so as to keep the pickup body not goes down.

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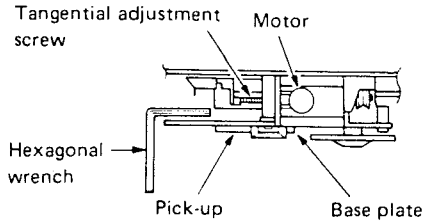

In the figure below, the top and bottom is opposite to that of the actual product.

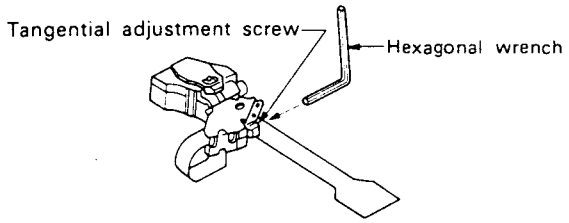

Fig. 9-5 Tangential adjustment

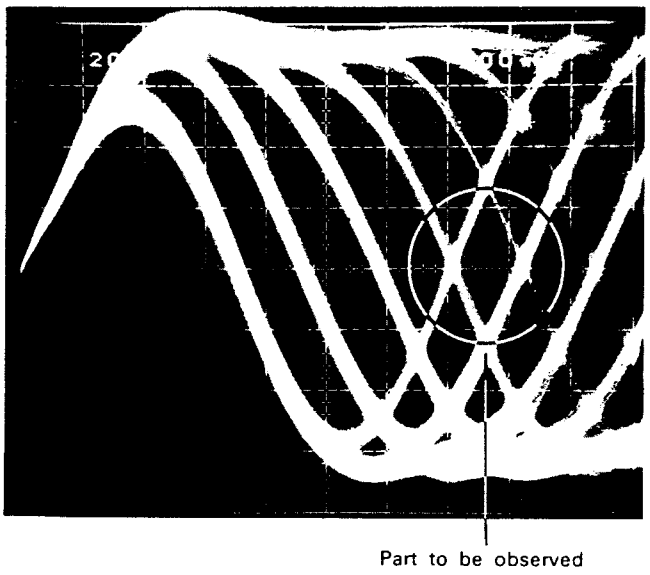

Photo. 9-6

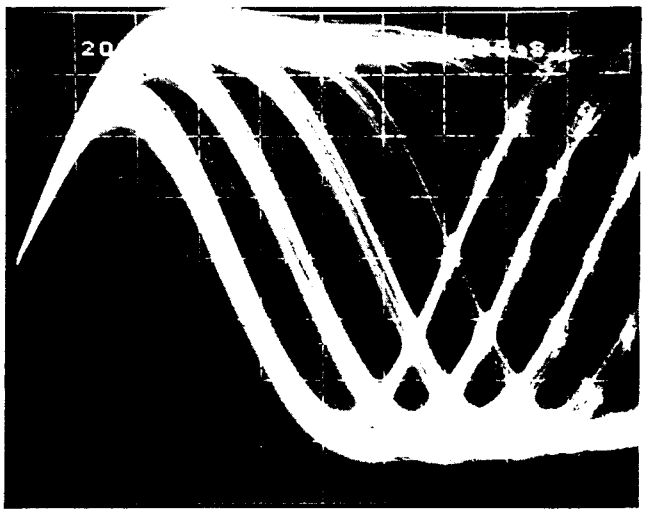

Photo. 9-7

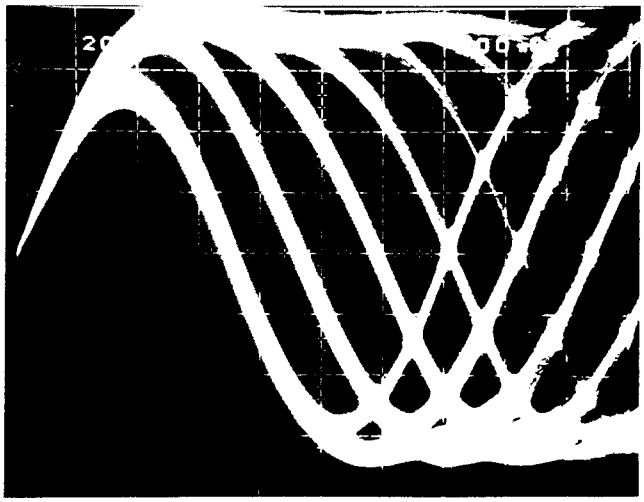

Photo. 9-8

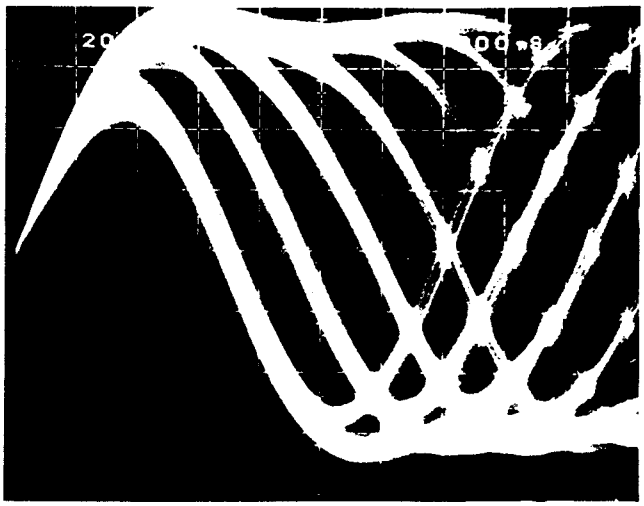

Photo. 9-9

Step No.	Oscilloscope Setting V	Oscilloscope Setting H	Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
8	FOCUS GAIN ADJUSTMENT					
						• In the POWER OFF state, connect an oscilloscope and oscillator as shown in Fig. 9-6. • Set to PLAY mode. • Turn the POWER of oscillator ON and output 1.2kHz 1 Vp-p. Note: (Depending upon oscillators, some of them output DC when their power turned ON. Therefore, it is desirable to connect oscillator after turning the power ON.)
	20mV/div.5/mV/div. CH1 (X), CH2 (Y) (Probe 10 : 1)		X axis TP1 Pin 5 (FCS.IN) Y axis TP1 Pin 6 (FCS.ERR)	VR3 (FCS.GAN)	Phase difference 90°	• Adjust with VR3 FCS.GAN (Focus gain) volume so that the lissajous figure of the oscilloscope becomes horizontal circle (Phase difference 90°).

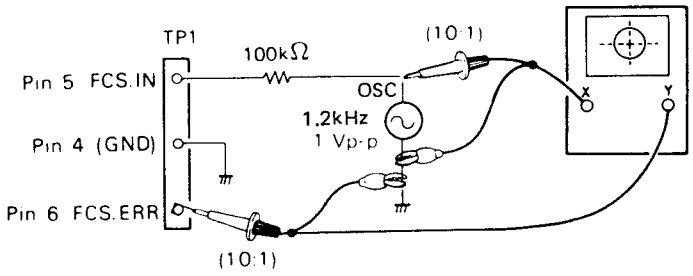

Fig. 9-6

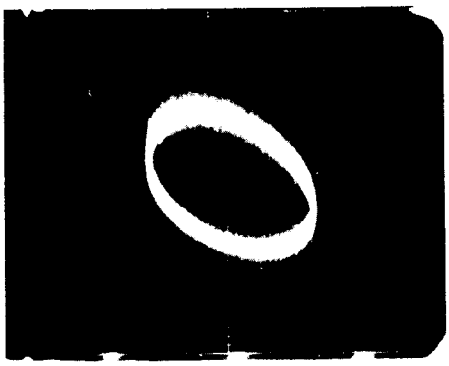

Photo. 9-10 High gain

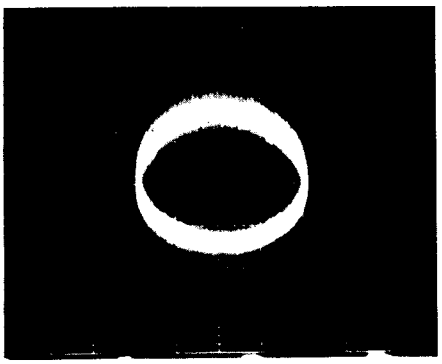

Photo. 9-11 Optimum gain

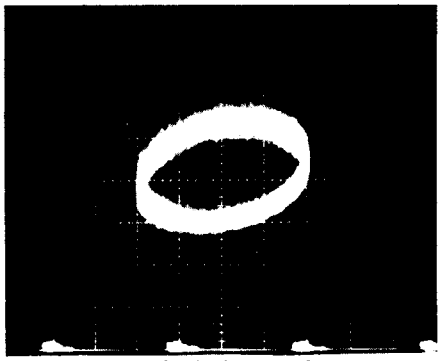

Photo. 9-12 Low gain

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Step No.	Oscilloscope Setting V	Oscilloscope Setting H	Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
9	TRACKING GAIN ADJUSTMENT					
	50 mV/div.5mV/div. CH1 (X), CH2 (Y) (Probe 10 : 1)		X axis TP1 Pin 3 (TRK.IN) Y axis TP1 Pin 2 (TRK.ERR)	VR4 (TRK.GAN)	Phase difference 90°	• In the POWER OFF state, connect an oscilloscope and oscillator as shown in Fig. 9-7. • Set to PLAY mode. • Turn the POWER of oscillator ON and output 1.2 kHz 2 Vp-p. Note: (Depending upon oscillators, some of them output DC when their power turned ON. Therefore, it is desirable to connect oscillator after turning the power ON.) • Adjust with VR4 TRK GAN (Tracking gain) volume so that the lissajous figure of the oscilloscope becomes horizontal circle (phase difference 90°).

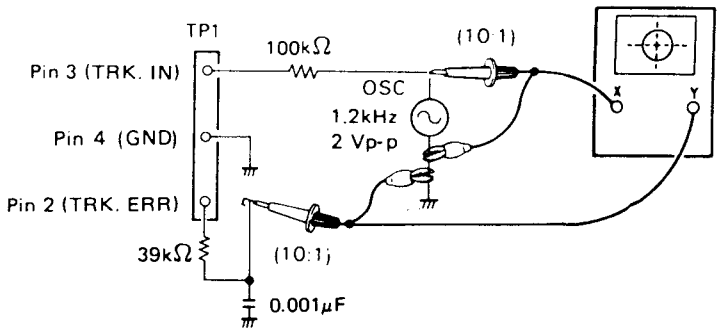

Fig. 9-7

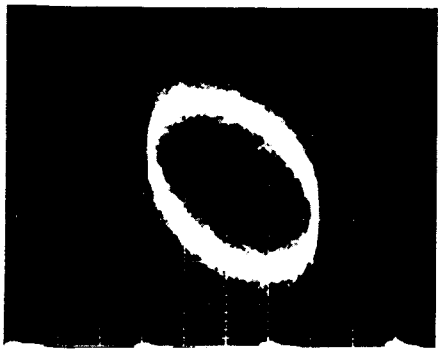

Photo. 9-13 High gain

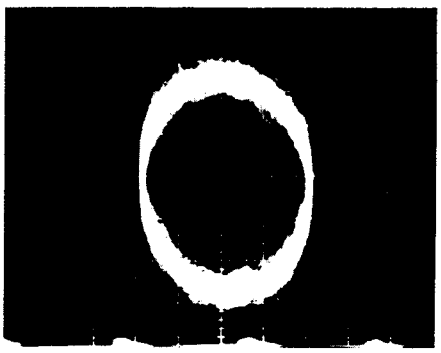

Photo. 9-14 Optimum gain

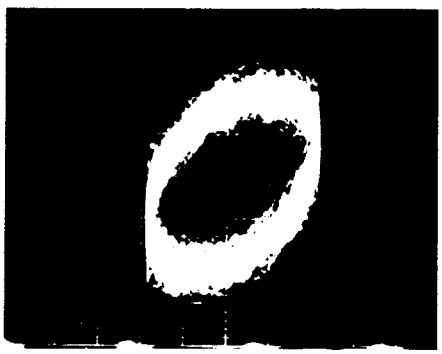

Photo. 9-15 Low gain

Step No.	Oscilloscope Setting V	Oscilloscope Setting H	Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
10	VCO FREE RUN FREQUENCY ADJUSTMENT					
			TP2 Pin 2 (PLCK)	VR8 (VCO.ADJ)	4.275 ±0.025 MHz	• Set to TEST mode. (See page 47.) • Short-circuit between ASY and GND jumper with grating driver, etc. (Fig. 9-1) • Connect frequency counter, which is measurable over 10 MHz, to pin 2 of TP2. • Adjust with VR8.VCO ADJ (VCO adjustment) volume so that the value of frequency counter becomes 4.275±0.025 MHz.
11	METHOD TO CONFIRM S CHARACTER (FOCUS ERROR)					
						• Set to TEST mode. (See page 47.) • Short-circuit between pin 5 FCS. IN (Focus in) of TP1 and GND. • Press TRACK FWD key (▷▷I) and observe the waveform of pin 6 FCS.ERR (Focus error) of TP1 at that time with an oscilloscope.

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10.4 ELECTRICAL PARTS LIST

NOTES:

- *Parts without part number cannot be supplied.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω	*56×10^1*	*561*	*RD1/4PS 5 6 1 J*
47kΩ	*47×10^3*	*473*	*RD1/4PS 4 7 3 J*
0.5Ω	*0R5*		*RN2H 0 R 5 K*
1Ω	*010*		*RS1P 0 1 0 K*

Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	*562×10^1*	*5621*	*RN1/4SR 5 6 2 1 F*

Miscellaneous Parts

P.C.BOARD ASSEMBLIES

Mark	Symbol & Description	Part No.
	Function assembly AF assembly MAIN VR assembly HEAD PHONO assembly	AWZ2217
	TRANS CONNECT assembly AMP, GEQ, CTRL assembly DECK−1 SW assembly DECK−2 SW assembly DECK CTRL assembly	AWZ2218 AWZ2219
	POWER SW assembly DECK CENTER assembly POWER SUPPLY assembly CONNECT assembly	AWZ2247

OTHERS

Mark	Symbol & Description	Part No.
⚠	T2001 Power Transformer (AC220V/240V)	ATS1179
⚠	FU2003 Fuse (T800mA/250V)	AEK−507
⚠	FU2001,FU2004,FU2005 Fuse (T1.25A/250V)	AEK−509
⚠	AC Power cord	ADG−063
	Hall IC	AZE1018
	Leaf SW	AZS1054
	Leaf SW	AZS1034
	P.C.BOARD	AZN1835
	Bobbin	AZS1035
	Bobbin	AZS1036
	Motor assembly	AZX1020
	Head frame assembly	AZP1023
	Head frame assembly	AZP1016

FUNCTION assembly

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	IC903,IC904	NJM4558DXP
	IC901	TC4052BP
	IC902	TC4066BP
	Q901	DTA143ES
	Q902	DTC143ES

CAPACITORS

Mark	Symbol & Description	Part No.
	C903−C906,C929,C930	CCCSL101J50
	C907,C908	CEAS2R2M50
	C909,C910	CKCYB152K50
	C911,C912	CKCYB562K50
	C913,C914	CEAS470M10
	C919,C920	CEAS100M25

RESISTORS

Mark	Symbol & Description	Part No.
	All resistors	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	Terminal 4P (VIDEO, PHONO)	AKB1085

AF assembly (AWZ2217)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	IC471	HA12136
	IC306	ICP−N38
	IC301,IC304	MC7812CT
	IC523	M74LS05P
	IC431,IC501,IC522	NJM4558DXP

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Mark	Symbol & Description	Part No.
	IC302	NJM78M05FA
	IC303	NJM79M05FA
	IC331	STK4142-2GP
	IC332	TA7291S
	IC412,IC521	TC4066BP
	Q578	RN1201
	Q354,Q573-Q577	RN1203
	Q571,Q572,Q579	RN2203
	Q355,Q483,Q580	2SA1048
	Q581,Q582	2SA1515
	Q493,Q494	2SC1740SLN
	Q351-Q353,Q356,Q411,Q412, Q431-Q438,Q481,Q482,Q491, Q492,Q521,Q522	2SC2458
	Q584	2SC2603
	Q523,Q524	2SC2878
	Q413,Q414	2SK373
	D351,D352,D411-D416,D491, D492,D571-D580	HSS-104-02
	D301	RBV402
	D310 Zener Diode	RD7.5ESB
	D302-D308,D311	S5566

RELAY

Mark	Symbol & Description	Part No.
	RY351	ASR1005

COILS & TRANSFOTMERS

Mark	Symbol & Description	Part No.
	F491,F492 Dolby filter	ATF1064
	L351,L352 AF choke coil	ATH-133
	L521,L522 Trap coil	ATM-037
	L451,L452 Trap coil	ATM1001
	T581 Bias oscillator transformer	ATX-043
	L523,L524 Inductor	LTA392J

CAPACITORS

Mark	Symbol & Description	Part No.
	C588 (2000P/630)	ACE1020
	C301,C302 (2200/42)	ACH1109
	C417,C418	CCCSL101K500
	C1611,C1612	CCCSL221J50
	C419,C420	CCCSL560K500
	C421,C422	CCMSL100D50
	C343	CEANP100M50
	C341	CEANP220M50
	C345	CEANP470M50
	C473,C474	CEASR22M50
	C495	CEASR33M50
	C437-C440,C491,C492, C521-C524	CEAS010M50
	C313,C342,C344,C352,C471, C472,C493,C494,C496,C570	CEAS100M50
	C475,C476	CEAS101M10
	C593	CEAS101M16
	C339,C340	CEAS101M25
	C304,C305	CEAS102M25
	C331,C332,C531,C532	CEAS2R2M50
	C307-C310,C478	CEAS220M25
	C351	CESA221M10
	C303	CEAS222M25
	C433,C434,C525,C526	CEAS330M16
	C591	CEAS4R7M50
	C435,C436	CEAS470M10
	C545,C546,C581	CEAS470M16
	C335,C337,C338	CEAS470M25
	C336	CEHAQ470M25
	C541,C542	CFTXA333J50
	C527,C528	CFTXA683J50
	C347-C350	CKCYX104M25
	C316	CKDYB392K500
	C346	CKDYF473Z50
	C587	CKMYB221K50
	C411,C412	CKMYB331K50
	C413,C414	CKMYB471K50
	C533,C534,C586	CKMYB681K50
	C415,C416	CKMYB821K50
	C582,C584	CQMA103K50
	C585	CQMA123K250
	C583	CQMA153K50
	C529,C530	CQMA182J50
	C535,C536	CQMA183J50
	C539,C540	CQMA562J50
	C590	CQMA562K400
	C431,C432	CQMA682J50
	C537,C538	CQMA752J50

RESISTORS

Mark	Symbol & Description	Part No.
	R307,R308	RS2LMFR22J
	R364	RS2LMF471J
	VR451,VR452 (100k)	VRTM6H104
	VR453,VR454 (20k)	VRTM6H203
	VR521,VR522 (20k)	VRTM6V203

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Mark	Symbol & Description	Part No.
	VR411,VR412 (200k)	VRTM6V204
	R590	RD1/2PM180J
	R341,R342,R345,R350－R352	RD1/4PMFL□□□J
	R301－R305,R337－R340,R343, R344,R348,R349	RD1/4PM□□□J
	Other resistors	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	4P Speaker terminal	AKE1012
	DC jack	AKN－203

MAIN VR assembly

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	IC391	NJM4558DXP
	Q393	2SA1048
	Q391,Q392	2SC2878

COILS

Mark	Symbol & Description	Part No.
	L391,L392 Axial Inductor (5.6μH)	LAU5R6K

CAPACITORS

Mark	Symbol & Description	Part No.
	C393,C394	CCMSL101J50
	C391,C392	CEAS4R7M50
	C397,C398	CEAS470M10
	C395,C396	CKCYF473Z50

RESISTORS

Mark	Symbol & Description	Part No.
	VR391 (100k × 2)	ACX1021
	Other resistors	RD1/8PM□□□J

HEAD PHONE assembly

CAPACITORS

Mark	Symbol & Description	Part No.
	C401	CKCYF473Z50

RESISTORS

Mark	Symbol & Description	Part No.
	R402－R405	RD1/2PMF681J
	R401	RD1/8PM100J

OTHERS

Mark	Symbol & Description	Part No.
	Head phone Jack	AKN1010

TRANS CONNECT assembly

No parts are supplied with the TRANS CONNECT assembly.

AMP,GEQ CTRL assembly (AWZ2218)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	IC701	M74LS05P
	IC702	TC4081BP
	IC721,IC722	BA3812L
	Q701,Q702	DTA143ES
	D701－D705 LED	AEL1065
	D707,D708	HSS104－02

SWITCHES

Mark	Symbol & Description	Part No.
	S701－S705	ASG1029

CAPACITORS

Mark	Symbol & Description	Part No.
	C743,C744	CCMSL101J50
	C727,C728	CEASR15M50
	C723,C724	CEASR68M50
	C741,C742,C747,C748	CEAS100M25
	C749,C750	CEAS470M16
	C733,C734	CKDYB182K50
	C729,C730	CKDYB392K50
	C739,C740	CKDYB682K50
	C735,C736	CKDYX153M25
	C725,C726	CKDYX183M25
	C721,C722	CKDYX393M25
	C731,C732	CKDYX683M25
	C745,C746	CKMYB331K50
	C737,C738	CKMYB391K50

RESISTORS

Mark	Symbol & Description	Part No.
	VR721－VR725 (30k-B5×2)	ACU1031
	Other resistors	RD1/8PM□□□J

DECK－1 SW assembly

SWITCHES

Mark	Symbol & Description	Part No.
	S811－S815 Tact switch (1FWD, 1REV, 1FF, 1REW, 1STOP)	ASG1029

DECK－2 SW assembly

SWITCHES

Mark	Symbol & Description	Part No.
	S821－S825 Tact switch (2FWD, 2REV, 2FF, 2REW, 2STOP)	ASG1029

DECK CTRL assembly (AWZ2219)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	IC802	M74LS42P
	IC801	PDE029－C
	Q814	DTC143ES
	Q803－806	RN1201
	Q801,802	RN2204
	Q807－812	2SA1515
	D801,D802,D808,D810－D815, D820－D824,D826,D834－D836	HSS104－02

COILS

Mark	Symbol & Description	Part No.
	X801 Ceramic resonator	ASS1018
	L801 Axial Inductor (22μH)	LAU220K

CAPACITORS

Mark	Symbol & Description	Part No.
	C801	CEASR33M50
	C803	CEAS101M10
	C802	CEAS101M16
	C839,C840	CKCYB102K50
	C804－C807	CKCYF473Z50

RESISTORS

Mark	Symbol & Description	Part No.
	VR803 (10k)	VRTM6H103
	VR801,VR802 (20k)	VRTM6H203
	Other resistors	RD1/8PM□□□J

POWER SW assembly

SWITCH

Mark	Symbol & Description	Part No.
	S707	ASG1029

DECK CENTER assembly

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	D845,D846LED	AEL1065
	D841－D844LED	AEL1076
	D847－D850	HSS104－02

SWITCHES

Mark	Symbol & Description	Part No.
	S841－S846 Tact switch	ASG1029
	S847,S848 Slide swithe	ASH1014

RESISTORS

Mark	Symbol & Description	Part No.
	All resistors	RD1/8PM□□□J

POWER SUPPLY assembly (AWZ2247)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	IC1002	NJM78M56FA
	IC1001	TC4069UBP
	Q1002	2SB560
	Q1003	2SC2240
	D1006,D1008,D1011－D1013	HSS104－02
	D1004 Zener Diode	RD33ESB2
	D1009 Zener Diode	RD5.1ESB
	D1001,D1003,D1005,D1007, D1014	S5566

TRANSFORMER

Mark	Symbol & Description	Part No.
⚠	T1001 Power transformer	ATT1092

RELAY

Mark	Symbol & Description	Part No.
⚠	RY1001 Relay	ASR1024

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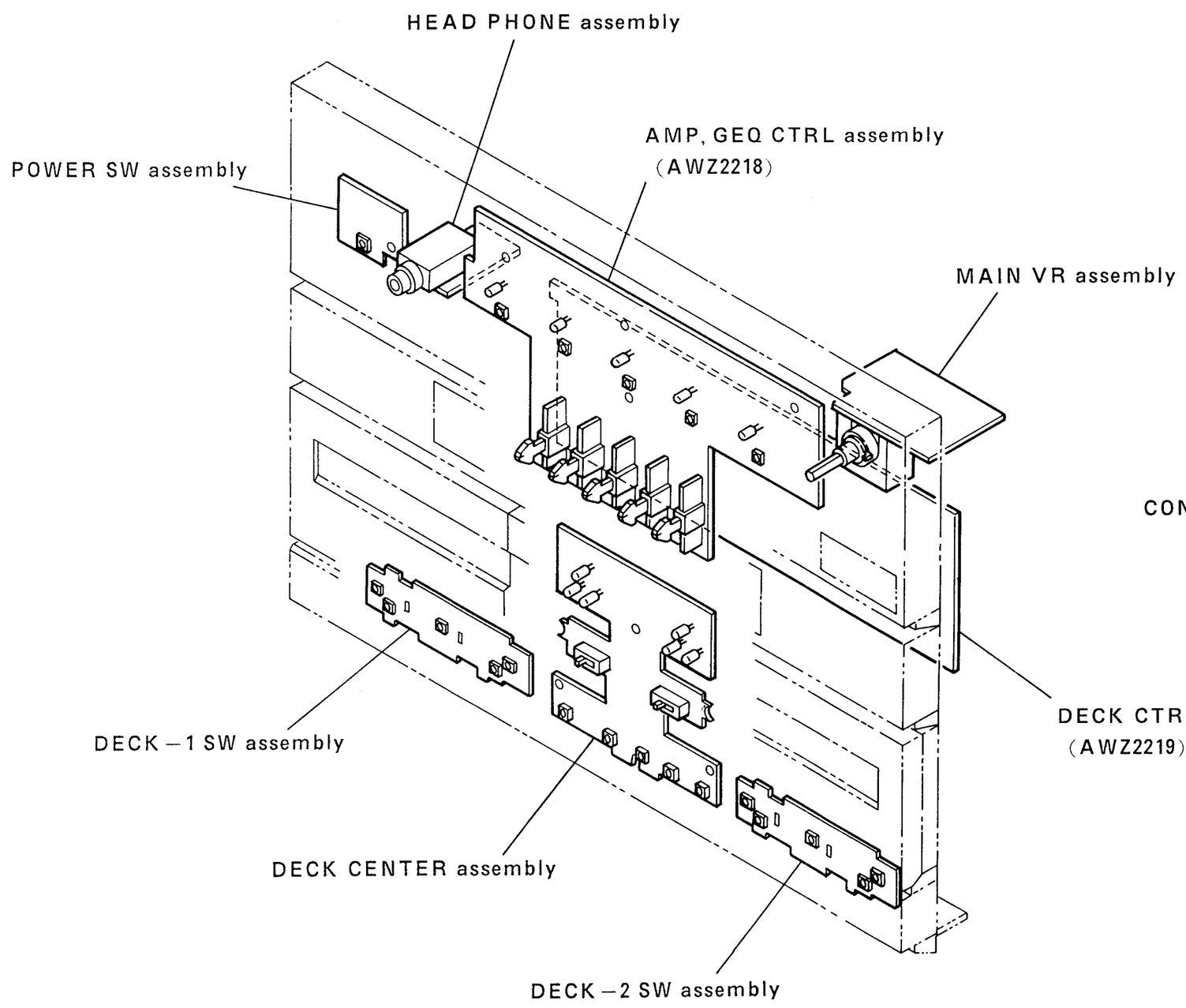
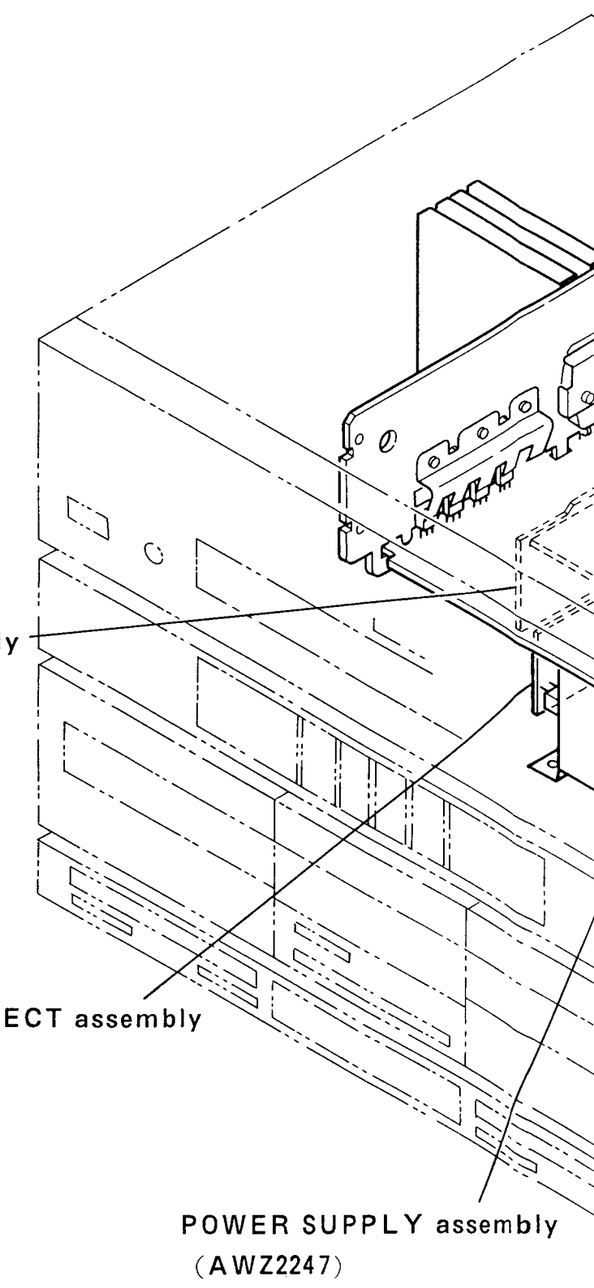
10. DECK AMPLIFIER BLOCK

10.1 P.C.BOARDS LOCATION





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, GEQ CTRL assembly
NZ2218)

MAIN VR assembly

DECK CTRL assembly
(AWZ2219)

ssembly

CONNECT assembly

TRANS CONNECT assembly

POWER SUPPLY assembly
(AWZ2247)

AF assembly
(AWZ2217)

FUNCTION assembly

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10.2 EXPLODED VIEWS AND PARTS LIST

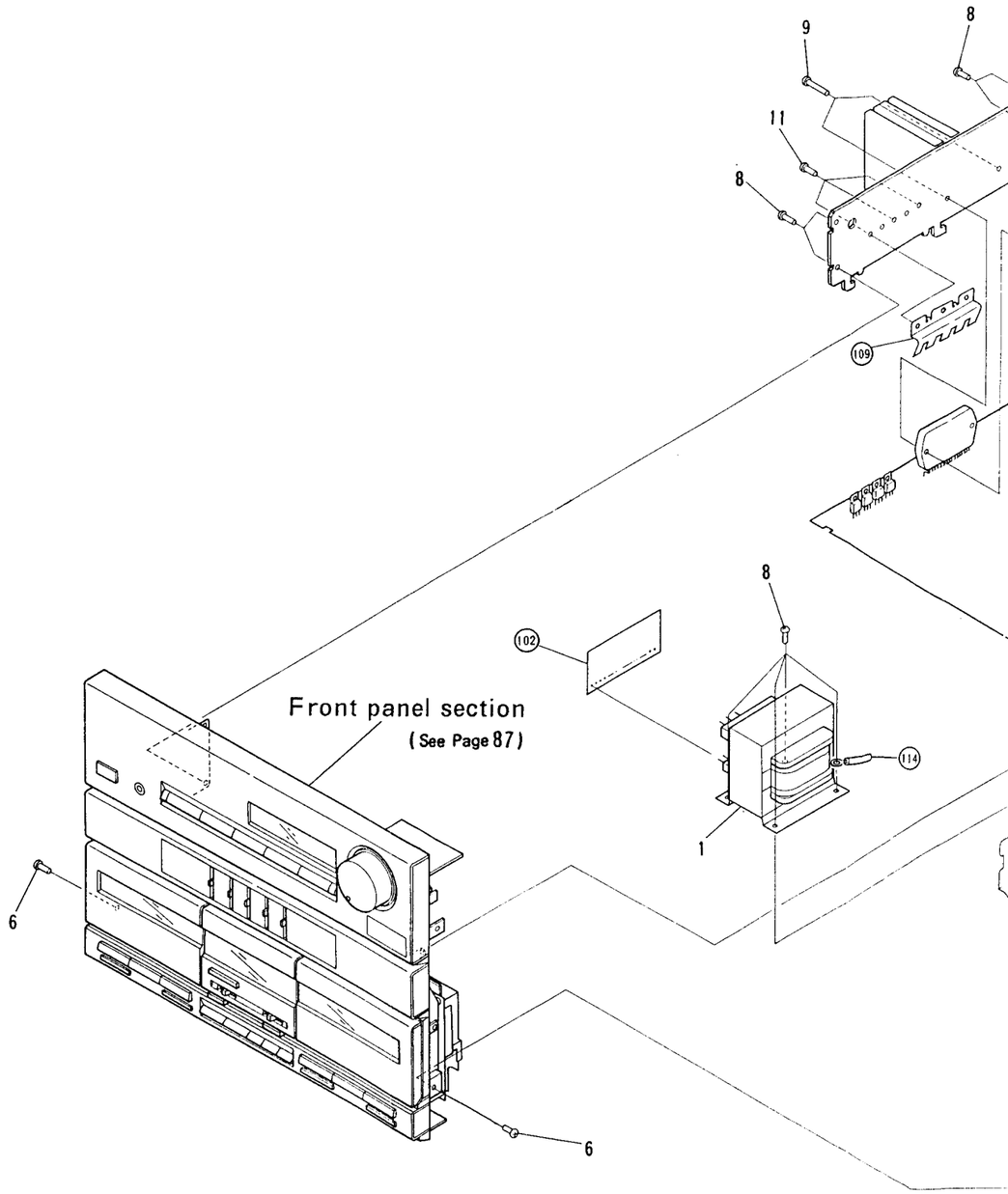
10.2.1 Main body section

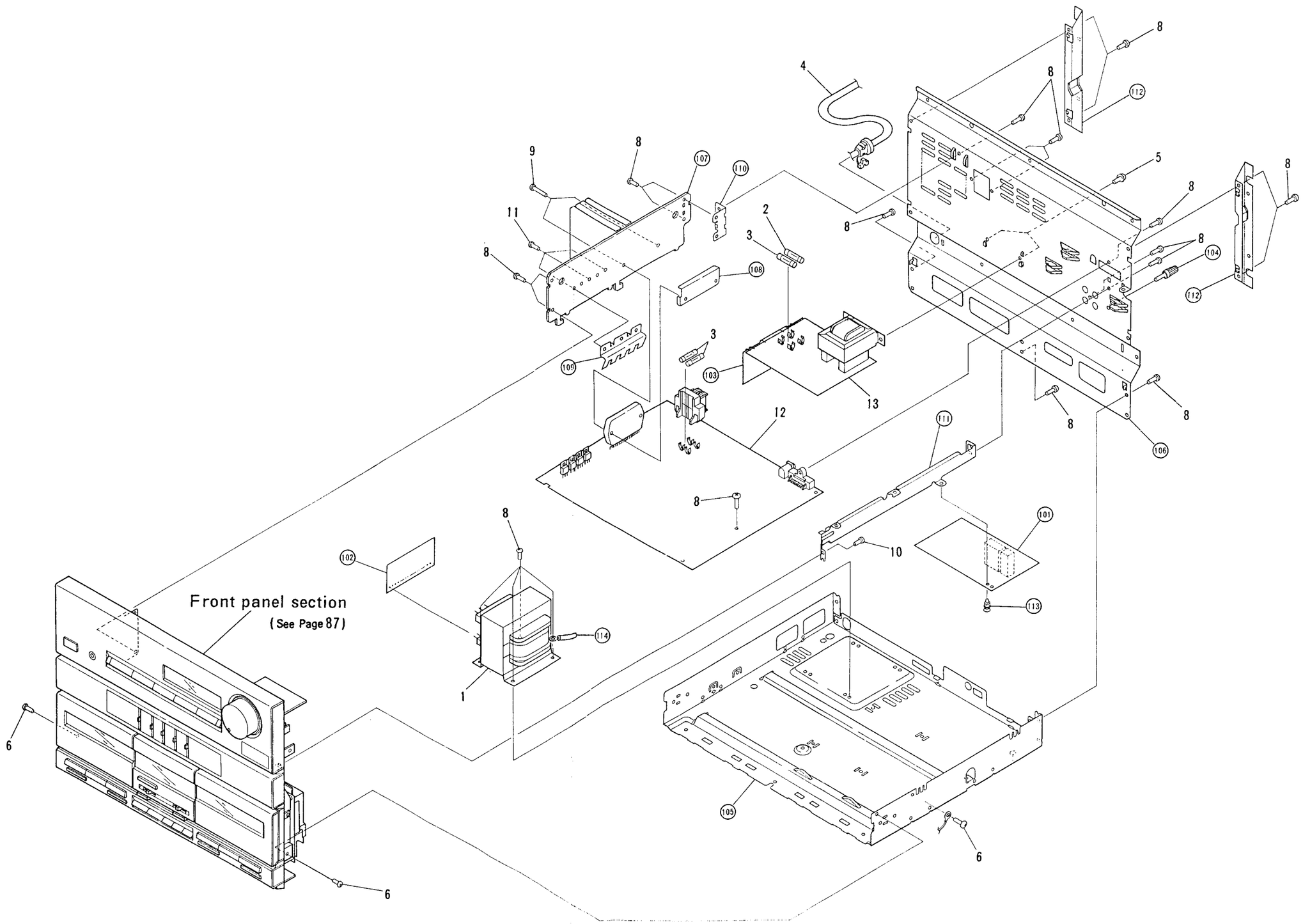
NOTES:

- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

Parts list of Main body section

Mark	No.	Parts No.	Description
⚠	1	ATS1179	Power transformer (T2001)
⚠	2	AEK-507	Fuse (T800mA/250V,FU2003)
⚠	3	AEK-509	Fuse (T1.25A/250A,FU2001,FU2004, FU2005)
⚠	4	ADG-063	AC Power cord
	5	ABA1084	Screw
	6	BBZ30P060FMC	Screw
	7	.....	.....
	8	BBZ30P080FZK	Screw
	9	VBZ30P160FMC	Screw
	10	VPZ30P080FZK	Screw
	11	VTZ30P100FZK	Screw
	12	AWZ2217	AF assembly
	13	AWZ2247	POWER SUPPLY assembly
	101		FUNCTION assembly
	102		TRANS CONNECT assembly
	103		CONNECT assembly
	104		Terminal screw
	105		Chassis
	106		Rear panel A
	107		Heat sink
	108		Plate
	109		Plate
	110		Plate B
	111		Plate
	112		Plate
	113		.....
	114		BINDER





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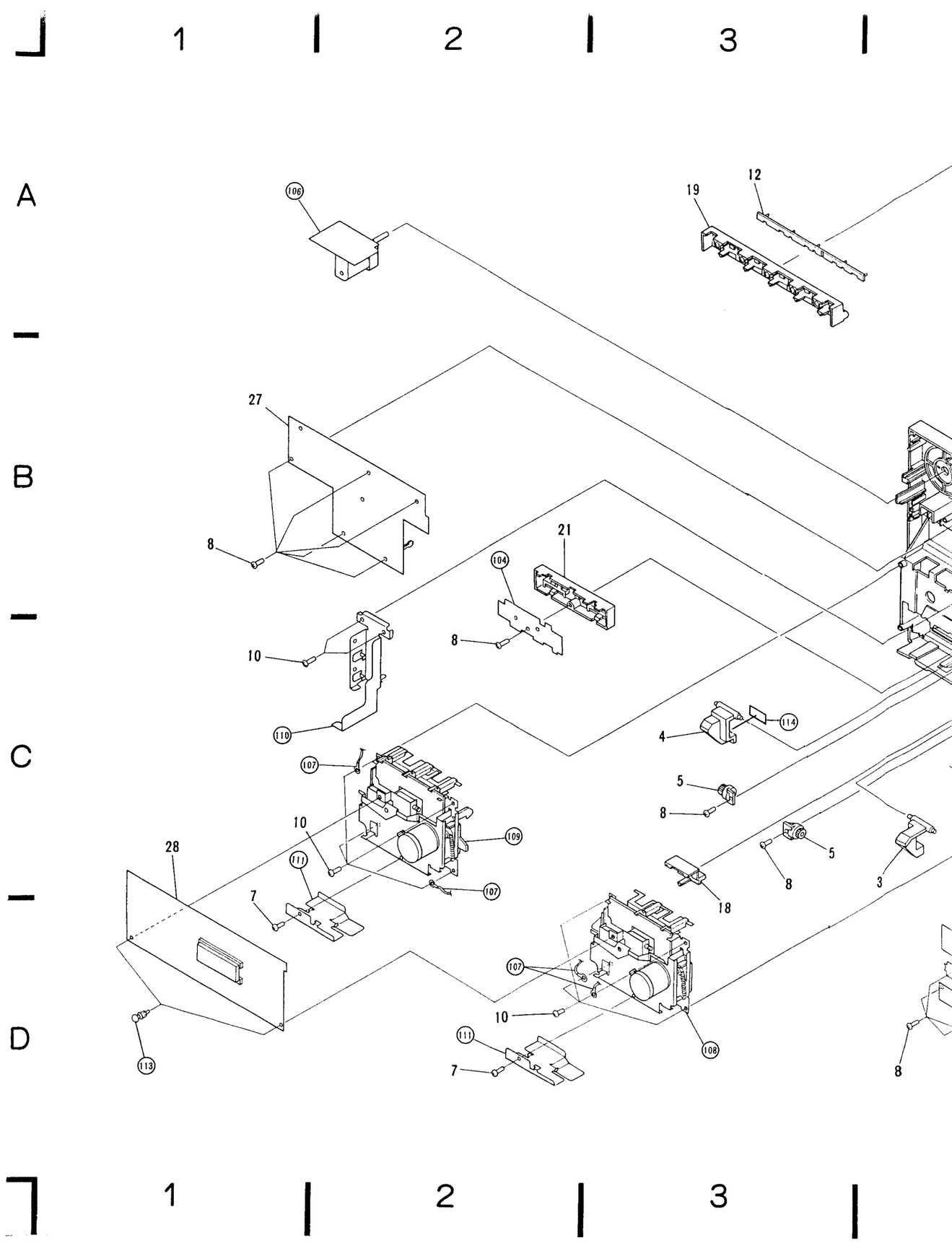
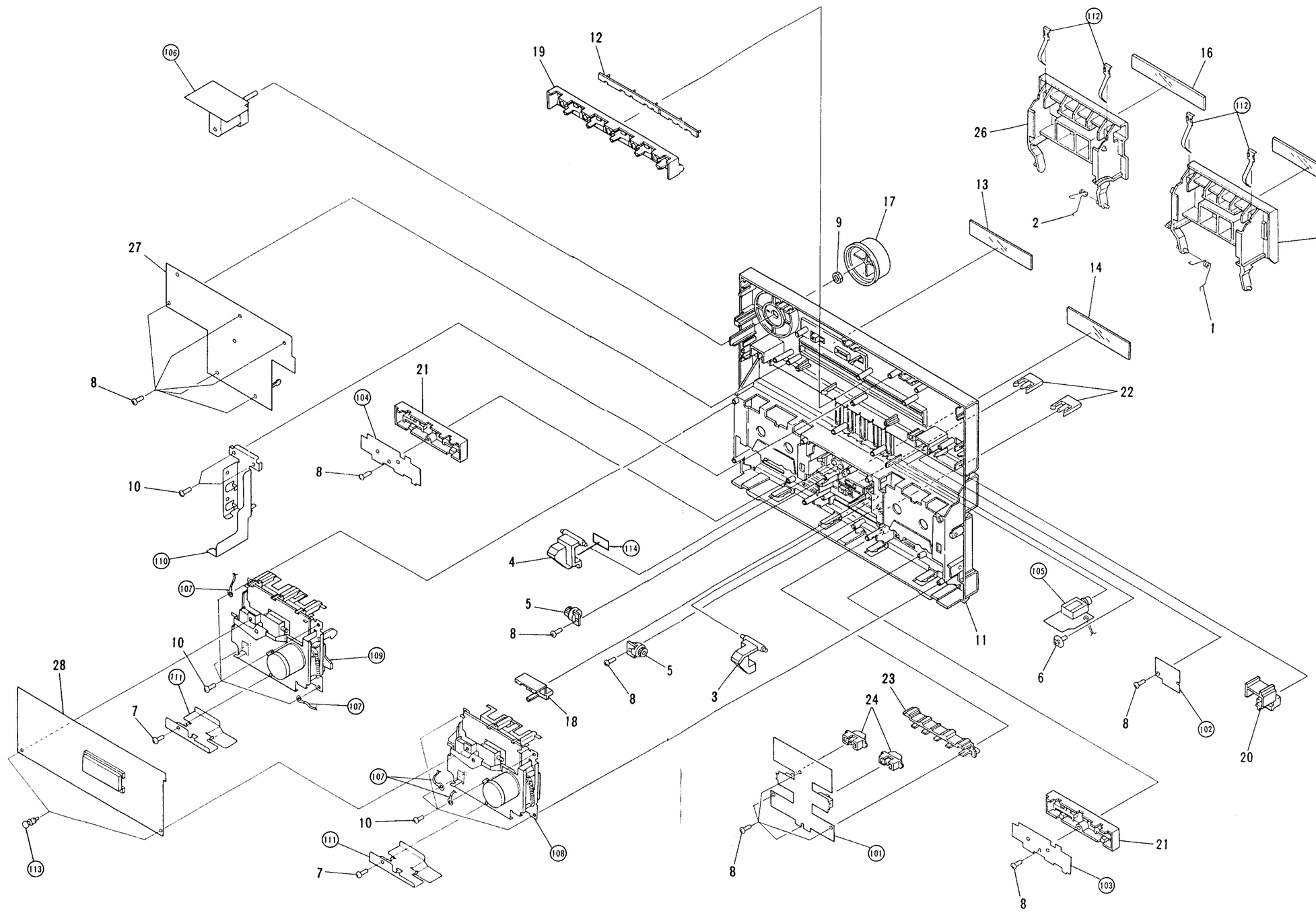
10.2.2 Front panel section

Parts list of Front panel section

Mark	No.	Parts No.	Description
	1	ABH1050	Spring
	2	ABH1051	Spring
	3	AMR1656	Eject lever-1
	4	AMR1657	Eject lever-2
	5	AXA1005	Damper assembly
	6	ABA-283	Screw (steel)
	7	BBZ26P080FMC	Screw
	8	BPZ26P080FMC	Screw
	9	NK90FUC	Nut
	10	VPZ30P080FZK	Screw
	11	AMB1484	Front panel assembly
	12	AAK1629	Indicator lens
	13	AAK1660	Decorative plate (AMP)
	14	AAK1661	Decorative plate (DECK)
	15	AAK1662	Decorative plate (DOOR)
	16	AAK1664	Decorative plate (DOOR)
	17	AAB1089	Knob (VOLUME)
	18	AAD1515	BUTTON (ASES)
	19	AAD1516	BUTTON (FUNCTION)
	20	AAD1520	BUTTON (POWER)
	21	AAD1525	BUTTON (PLAY)
	22	AAD1528	BUTTON (EJECT)
	23	AAD1529	BUTTON (REC)
	24	AAE1103	Slide knob
	25	AAN1125	Cassette door
	26	AAN1126	Cassette door
	27	AWZ2218	AMP GEQ CTRL assembly
	28	AWZ2219	DECK CTRL assembly
	101		DECK CENTER assembly
	102		POWER SW assembly
	103		DECK-1 SW assembly
	104		DECK-2 SW assembly
	105		HEAD PHONE assembly
	106		MAIN VR assembly
	107		Earth lead
	108		Mecha unit
	109		Mecha unit
	110		Plate A
	111		Shield plate
	112		Keep plate
	113		Nylon revet
	114		SPACER





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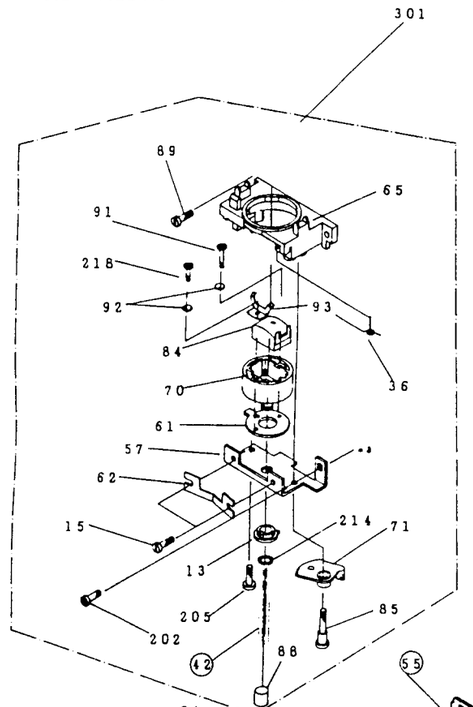
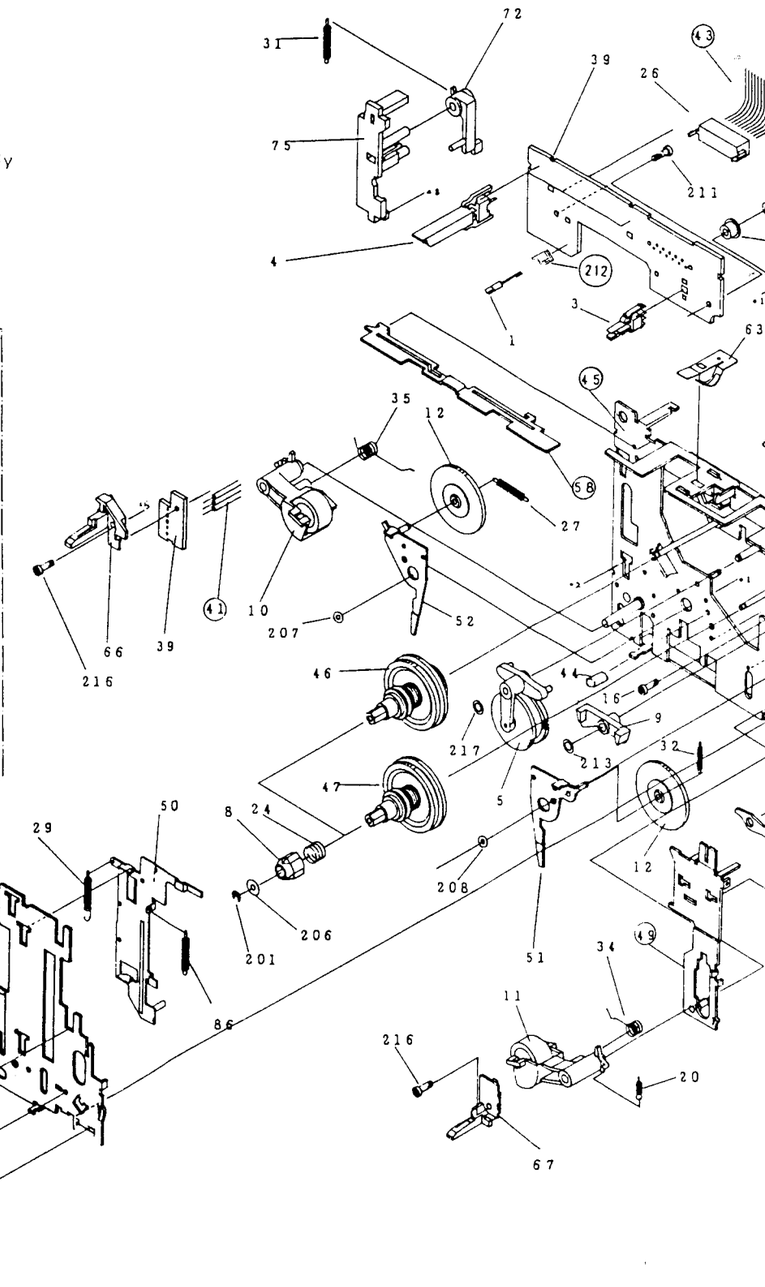
10.2.3 Mecha unit 1

Mark	No.	Parts No.	Description
	1	AZE1018	Hall IC
	2	AZX1019	Motor
	3	AZS1054	Leaf SW(MODE)
	4	AZS1034	Leaf SW (HALF,Cr02)
	5	AZN1286	Drive arm assembly
	6	AZN1287	FW assembly A
	7	AZN1288	Cam gear
	8	AZN1289	Reel
	9	AZN1290	FR arm
	10	AZN1797	P arm L assembly
	11	AZN1798	P arm R assembly
	12	AZN1293	Gear
	13	AZN1294	H Gear
	14	AZN1793	CUE arm
	15	AZB1079	Screw
	16	AZB1080	Screw
	17	AZN1296	Collar C
	18	AZN1297	Motor pully
	19	AZN1298	Belt
	20	AZN1299	Spring
	21	AZN1300	FR lever spring
	22	AZN1301	FWF spring
	23	AZN1302	FWR spring
	24	AZN1303	Spring
	25	AZB1088	Collar
	26	AZN1467	Cable holder
	27	AZN1306	Spring
	28	AZN1307	Spring
	29	AZN1308	Spring
	30	AZN1309	Spring
	31	AZN1310	Spring
	32	AZN1311	Spring
	33	AZN1312	Spring
	34	AZN1313	Spring
	35	AZN1314	Spring
	36	AZN1315	Spring
	37	AZB1081	Screw
	38	AZN1316	Nylon band
	39	AZN1835	P.C.Board
	40		Jumper wire
	41		Head lead
	42		Lead wire
	43		Lead wire
	44	AZN1468	Tube
	45		Mecha P.C.Board calking assembly
	46	AZN1319	R Reel assembly
	47	AZN1320	F Reel assembly
	48	AZN1321	Reverse arm calking assembly
	49		FR lever calking assembly
	50	AZN1795	PLAY lever calking assembly
	51	AZN1324	Gear arm R calking assembly
	52	AZN1325	Gear arm L calking assembly

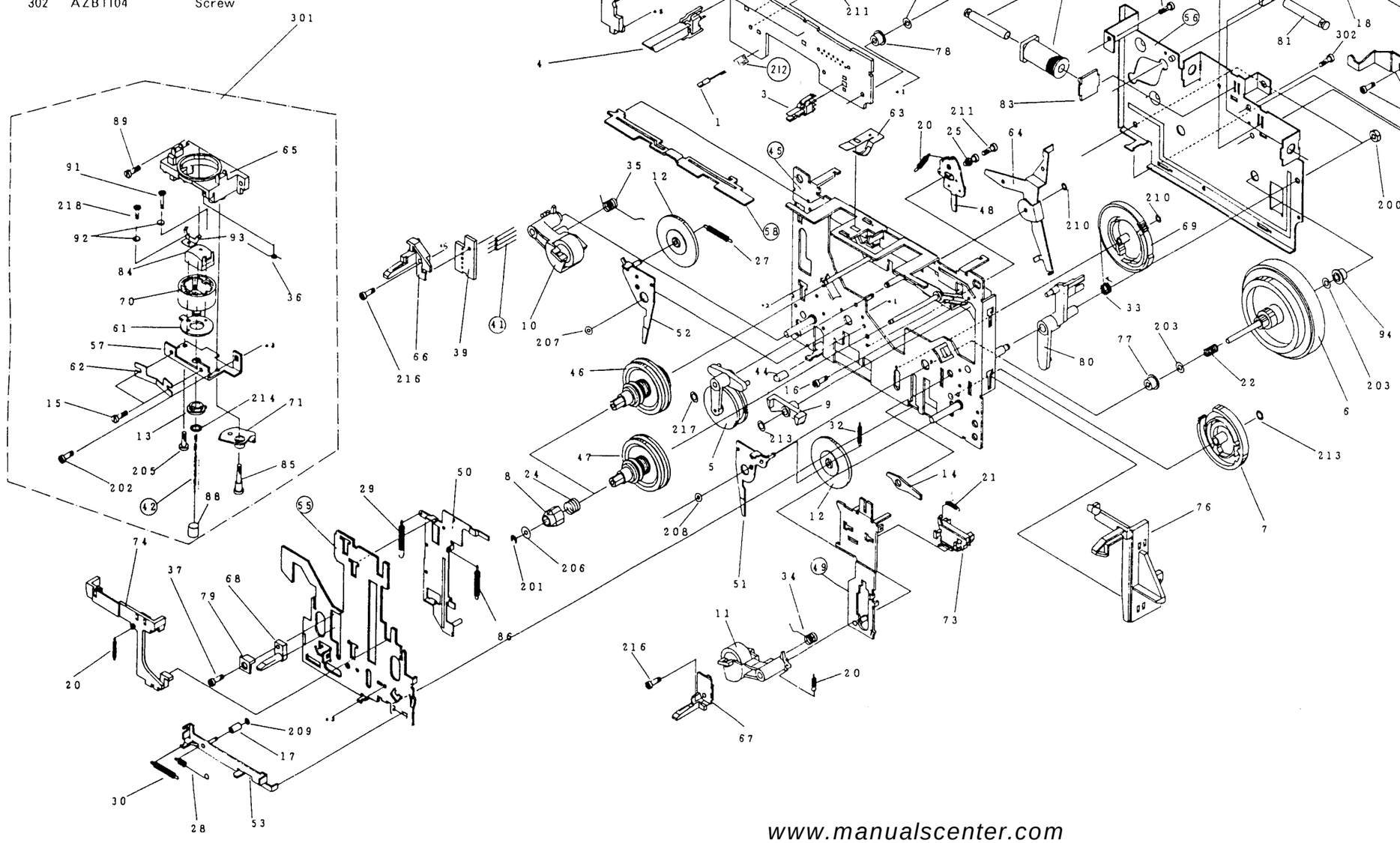
Mark	No.	Parts No.	Description
	53	AZN1326	Head lever calking assembly
	54	AZN1327	FW assembly
	55		Head P.C.Board
	56		Plate(FLYWHEEL)
	57	AZN1328	Azimuth plate
	58		SW arm
	59	AZN1356	Eject arm L
	60	AZN1357	Eject arm R
	61	AZN1330	Head arm
	62	AZN1331	P Azimuth spring
	63	AZN1332	Cassette stopper
	64	AZN1333	Play trigger calking assembly
	65	AZN1334	Head frame
	66	AZN1335	Cassette guide L
	67	AZN1336	Cassette guide R
	68	AZN1337	Cassette guide
	69	AZN1338	Cam gear
	70	AZN1469	Head holder
	71	AZN1340	Head gear
	72	AZN1341	Eject arm
	73	AZN1342	Select lever
	74	AZN1343	Brake
	75	AZN1344	Eject lever L
	76	AZN1345	Ratch lever R
	77	AZN1346	Metal
	78	AZN1347	Metal
	79	AZN1348	Cushion
	80	AZN1349	Trigger arm
	81	AZN1350	Plunger
	82	AZS1035	Bobbin
	83	AZN1351	Solenoid plate calking assembly
	84	AZP1022	P Head
	85	AZB1099	Screw
	86	AZN1352	Spring
	87	AZN1304	Spacer
	88	AZN1470	Tube
	89	AZB1100	Screw
	90	AZS1036	Bobbin
	91	AZB1101	Screw
	92	AZB1102	Spring washer
	93	AZN1471	Head spring
	94	AZN1833	Capstan holder
	95	AZN1834	Capstan holder
	200	AZB1084	Nut
	201	AZB1085	E ring
	202	AZB1086	D Screw
	203	AZB1121	P Washer
	204	AZB1087	N Washer
	205	AZB1089	U Screw
	206	AZB1090	P Washer
	207	AZB1091	Oil cut
	208	AZB1092	Oil cut
	209	AZB1093	P Washer
	210	AZB1094	P Washer

Mark	No.	Parts No.	Description
	211	AZB1095	D Screw
	212		Holder
	213	AZB1097	P Washer
	214	AZB1098	M Washer
	215	AZB1105	P Screw
	216	AZB1106	D Screw
	217	AZB1107	P Washer
	218	AZB1164	P screw
	300	AZX1020	Motor assembly
	301	AZP1023	Head frame assembly
	302	AZB1104	Screw





Mark	No.	Parts No.	Description
	211	AZB1095	D Screw
	212		Holder
	213	AZB1097	P Washer
	214	AZB1098	M Washer
	215	AZB1105	P Screw
	216	AZB1106	D Screw
	217	AZB1107	P Washer
	218	AZB1164	P screw
	300	AZX1020	Motor assembly
	301	AZP1023	Head frame assembly
	302	AZB1104	Screw



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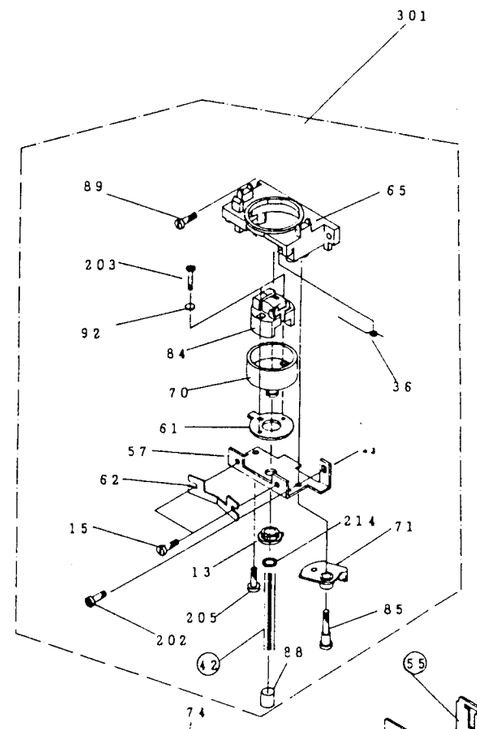
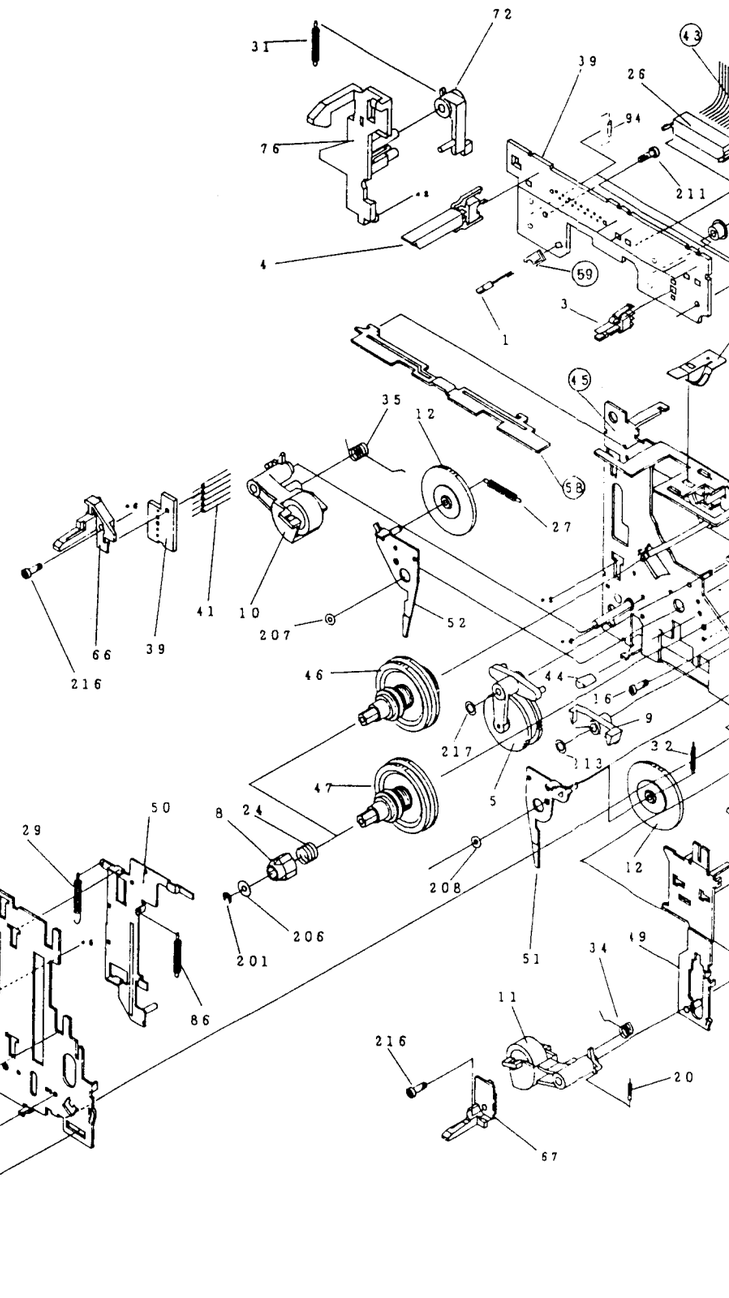
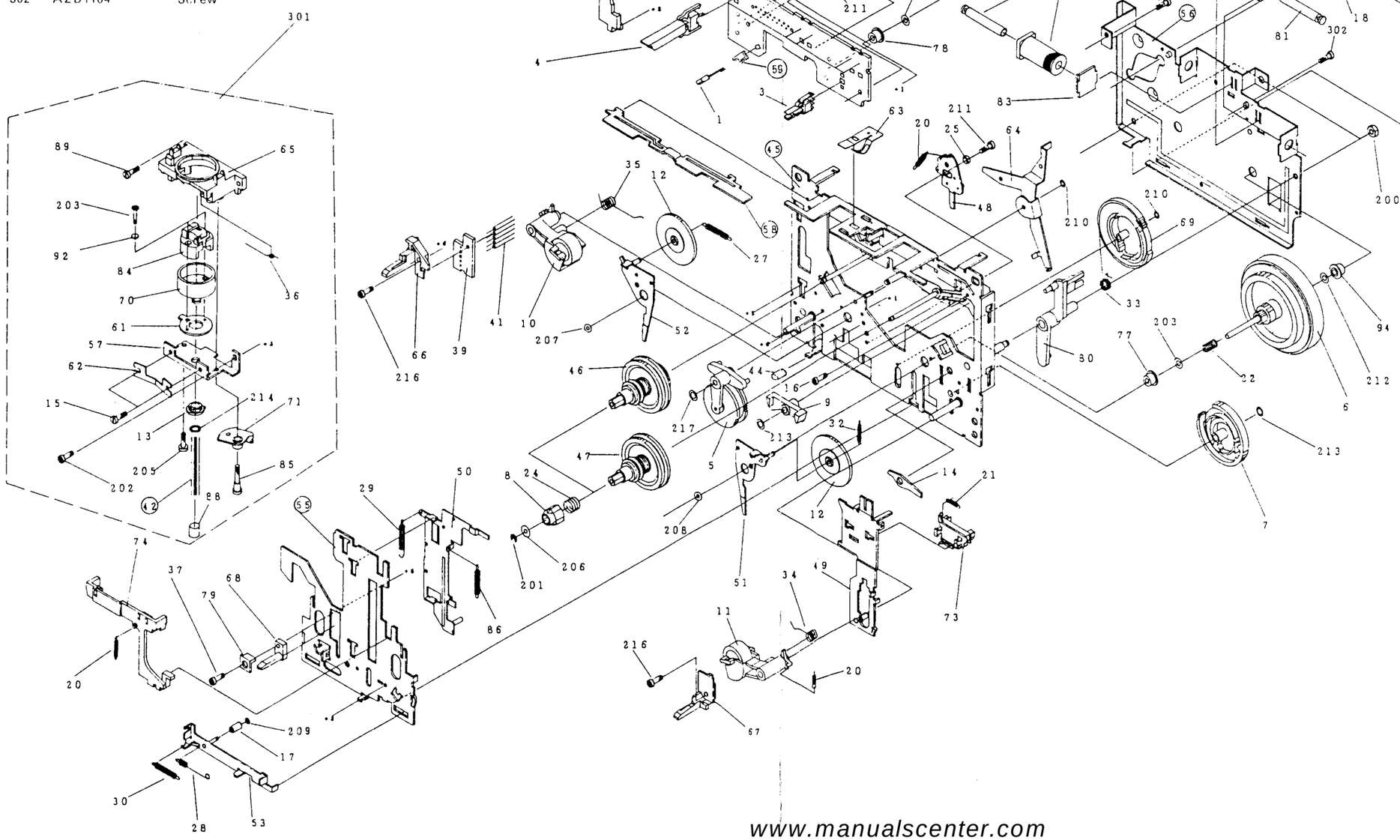
10.2.4 Mecha unit 2

Mark	No.	Parts No.	Description
	1	AZE1018	Hall IC
	2	AZX1019	Motor
	3	AZS1054	Leaf SW(MODE)
	4	AZS1034	Leaf SW (ARF,HALF,CrO2)
	5	AZN1286	Drive arm assembly
	6	AZN1287	FW assembly A
	7	AZN1288	Cam gear
	8	AZN1289	Reel
	9	AZN1290	FR arm
	10	AZN1797	P arm L assembly
	11	AZN1798	P arm R assembly
	12	AZN1293	Gear
	13	AZN1294	H Gear
	14	AZN1793	CUE arm
	15	AZB1079	Screw
	16	AZB1080	Screw
	17	AZB1296	Collar C
	18	AZN1297	Motor pully
	19	AZN1298	Belt
	20	AZN1299	Spring
	21	AZN1300	FR lever spring
	22	AZN1301	FWF spring
	23	AZN1302	FWR spring
	24	AZN1303	Spring
	25	AZB1088	Collar
	26	AZN1305	Cable holder
	27	AZN1306	Spring
	28	AZN1307	Spring
	29	AZN1308	Spring
	30	AZN1309	Spring
	31	AZN1310	Spring
	32	AZN1311	Spring
	33	AZN1312	Spring
	34	AZN1313	Spring
	35	AZN1314	Spring
	36	AZN1315	Spring
	37	AZB1081	Screw
	38	AZN1316	Nylon band
	39	AZN1836	P.C.Board
	40		Jumper wire
	41		Head lead
	42		Lead wire
	43		Lead wire
	44	AZN1468	Tube
	45		Mecha P.C.Board calking assembly
	46	AZN1319	R Reel assembly
	47	AZN1320	F Reel assembly
	48	AZN1321	Reverse arm calking assembly
	49		FR lever calking assembly
	50	AZN1795	PLAY lever calking assembly
	51	AZN1324	Gear arm R calking assembly
	52	AZN1325	Gear arm L calking assembly
	53	AZN1326	Head lever calking assembly
	54	AZN1327	FW assembly
	55		Head P.C.Board
	56		Plate(FLYWHEEL)
	57	AZN1328	Azimuth plate
	58		SW arm
	59		Holder
	60		.....
	61	AZN1330	Head arm
	62	AZN1331	Azimuth spring
	63	AZN1332	Cassette stopper
	64	AZN1333	Play trigger calking assembly
	65	AZN1334	Head frame
	66	AZN1335	Cassette guide L
	67	AZN1336	Cassette guide R
	68	AZN1337	Cassette guide
	69	AZN1338	Cam gear
	70	AZN1469	Head holder
	71	AZN1340	Head gear
	72	AZN1341	Eject arm
	73	AZN1342	Select lever
	74	AZN1343	Brake
	75		.....
	76	AZN1353	Ratch lever R
	77	AZN1346	Metal
	78	AZN1347	Metal
	79	AZN1348	Cushion
	80	AZN1349	Trigger arm
	81	AZN1350	Plunger
	82	AZS1035	Bobbin
	83	AZN1351	Solenoid plate calking assembly
	84	AZP1014	R/P/E Head
	85	AZB1099	Screw
	86	AZN1352	Spring
	87	AZN1304	Spacer
	88	AZN1470	Tube
	89	AZB1100	Screw
	90	AZS1036	Bobbin
	91	AZB1101	Screw
	92	AZB1102	Spring washer
	93		.....
	94	AZN1833	Capstan holder
	95	AZN1834	Capstan holder
	200	AZB1084	Nut
	201	AZB1085	E ring
	202	AZB1086	D Screw
	203	AZB1121	P Washer
	204	AZB1087	N Washer
	205	AZB1089	U Screw
	206	AZB1090	P Washer
	207	AZB1091	Oil cut
	208	AZB1092	Oil cut
	209	AZB1093	P Washer
	210	AZB1094	P Washer
	211	AZB1095	D Screw
	212		.....
	213	AZB1097	P Washer
	214	AZB1098	M Washer
	215	AZB1105	P Screw
	216	AZB1106	D Screw
	217	AZB1107	P Washer
	218		.....
	300	AZX1020	Motor assembly
	301	AZP1016	Head frame assembly
	302	AZB1104	Screw





Mark	No.	Parts No.	Description
	211	AZB1095	D Screw
	212		• • • • •
	213	AZB1097	P Washer
	214	AZB1098	M Washer
	215	AZB1105	P Screw
	216	AZB1106	D Screw
	217	AZB1107	P Washer
	218		• • • • •
	300	AZX1020	Motor assembly
	301	AZP1016	Head frame assembly
	302	AZB1104	Screw



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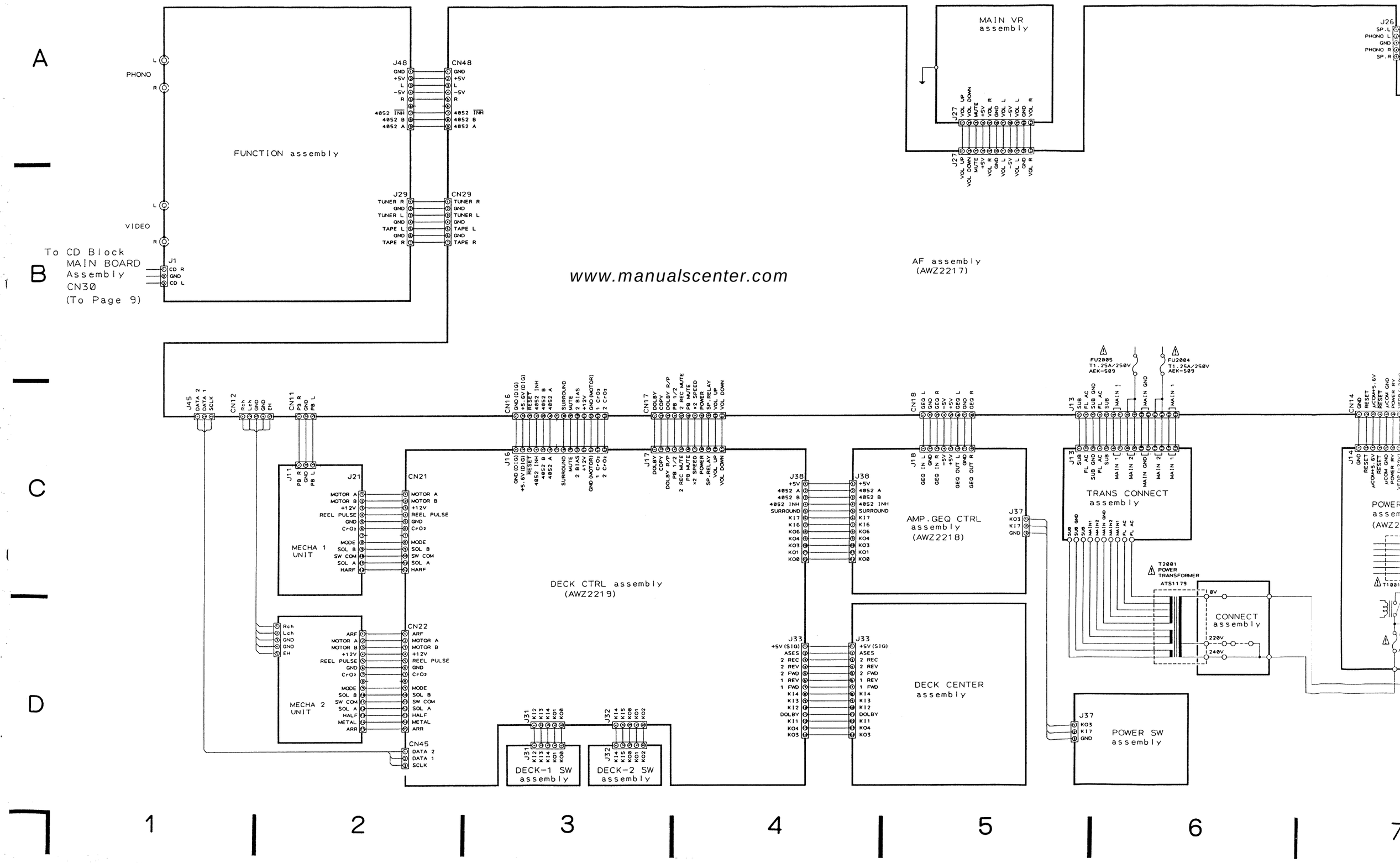
10.3 SCHEMATIC DIAGRAM AND P.C.BOARDS CONNECTION DIAGRAM

10.3.1 Over all schematic diagram



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MAIN VR assembly

J27: VOL UP, VOL DOWN, MUTE, +5V, +5V R, GND, VOL L, -5V, VOL L, GND, VOL R

AF assembly (AWZ2217)

J26 — CN26: SP.L, PHONO L, GND, PHONO R, SP.R — HEAD PHONE assembly

FRONT SPEAKER: Lch, Rch

DC+12V OUTPUT To TURNTABLE

CN54: TUNER L, GND, TUNER R, +12V, +5.6V, RESET, μ COM GND, AUTO FUNC, VFDP, AC2, AC1, SR, SC, DATA1, DATA2 — To TUNER

FU2005 T1.25A/250V AEK-589

FU2004 T1.25A/250V AEK-589

CN17: DOLBY COPY, DOLBY R/P, PB 1/2, 2 REC MUTE, PB MUTE, x2 SPEED, POWER, SP RELAY, VOL UP, VOL DOWN

CN18: GEQ L, GND, GEQ R, -5V, +5V, GEQ OUT L, GND, GEQ R

J13: SUB, FL AC, SUB GND, FL AC, SUB, MAIN 1, MAIN 2, MAIN GND, MAIN 2, MAIN 1

CN14: GND, RESET, μCOM+5.6V, RESET, μCOM GND, POWER SW, VFDP(-29V), TUNER FLAC, TUNER FLAC

J38: +5V, 4052 A, 4052 B, 4052 INH, SURROUND, K17, K16, K06, K04, K03, K01, K00

AMP.GEQ CTRL assembly (AWZ2218)

J37: K03, K17, GND

TRANS CONNECT assembly

POWER SUPPLY assembly (AWZ2247)

T2001 POWER TRANSFORMER ATS1179

T1001 ATT1092

CONNECT assembly

J33: +5V (S1G), ASES, 2 REC, 2 REV, 2 FWD, 1 REV, 1 FWD, K14, K13, K12, DOLBY, K11, K04, K03

DECK CENTER assembly

J37: K03, K17, GND

POWER SW assembly

FU2003 T800mA/250V AEK-587

FU2001 T1.25A/250V AEK-589

J1001: K — To Pin1, J — To Pin2

To CD Block TRANSFORMER BOARD Assembly

(To Page 9)

AC240V 50/60Hz

AC POWER CORD ADG-063

K-2 SW assembly

1. RESISTORS:
Indicated in Ω, ¼W, ⅛W, ±5% tolerance unless otherwise noted k : kΩ, M : MΩ, (F) : ±1%, (G) : ±2%, (K) : ±10% (M); ±20% tolerance

2. CAPACITORS:
Indicated in capacity (μF)/voltage (V) unless otherwise noted p : pF
Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE, CURRENT:
: Signal voltage at (33 W + 33 W 8Ω)output (1kHz)
: DC voltage (V) at no input signal
Value in ( ) is DC voltage at rated power.
⇦ mA : DC current at no input signal

4. OTHERS:
➡ : Signal route.
⊘ : Adjusting point.
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
※ marked capacitors and resistors have parts numbers.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

SWITCHES:

AMP,GEQ CTRL assembly (AWZ2218)
S701-S705 TACT SW

DECK-1 SW assembly
S811-S815 TACT SW

DECK-2 SW assembly
S821-S825 TACT SW

DECK CENTER assembly
S847 DOLBY OFF-ON
S848 REVERSE MODE

S841-S846 TACT SW

POWER SW assembly
S707 POWER

The underline indicates the switch position

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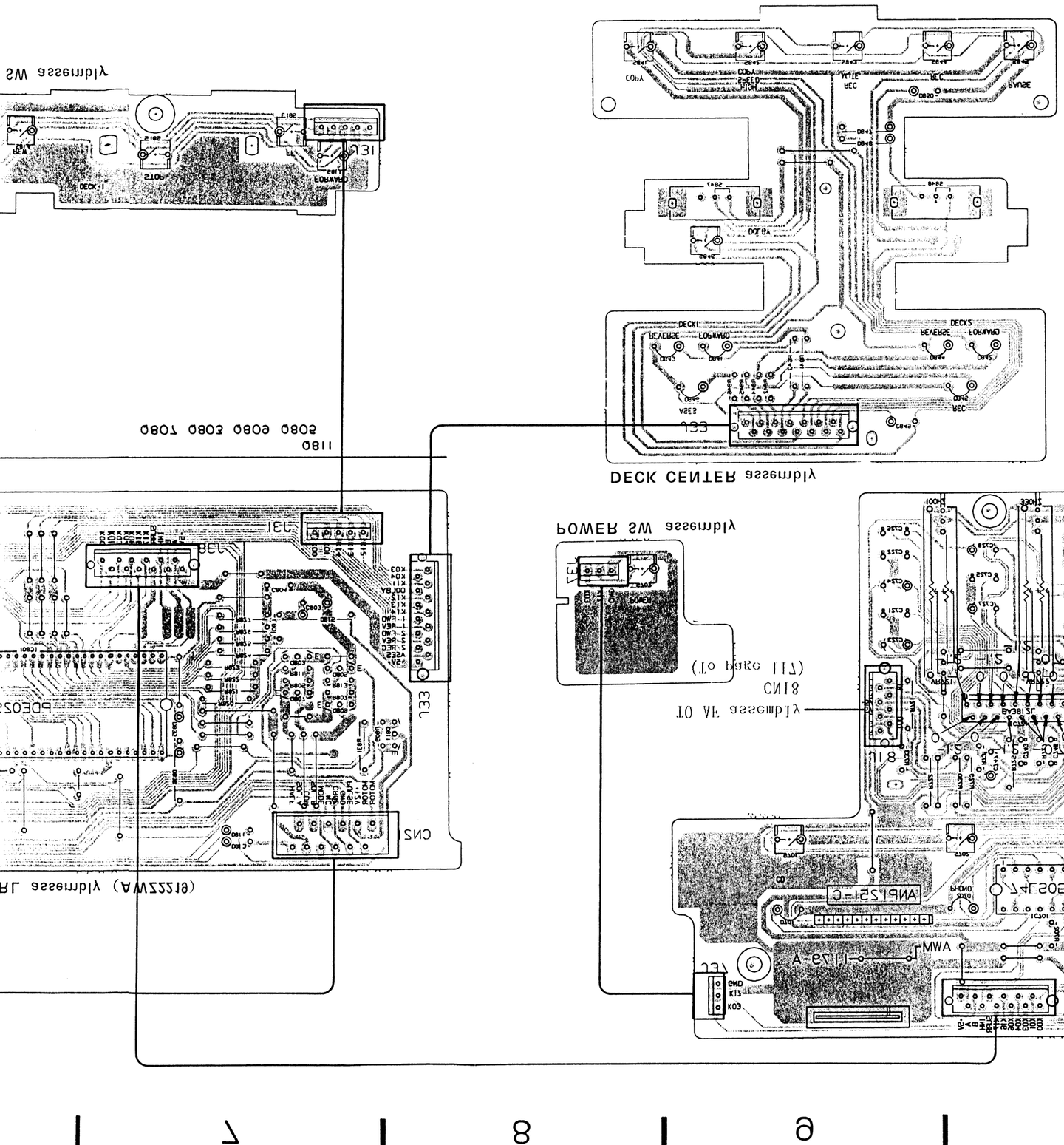

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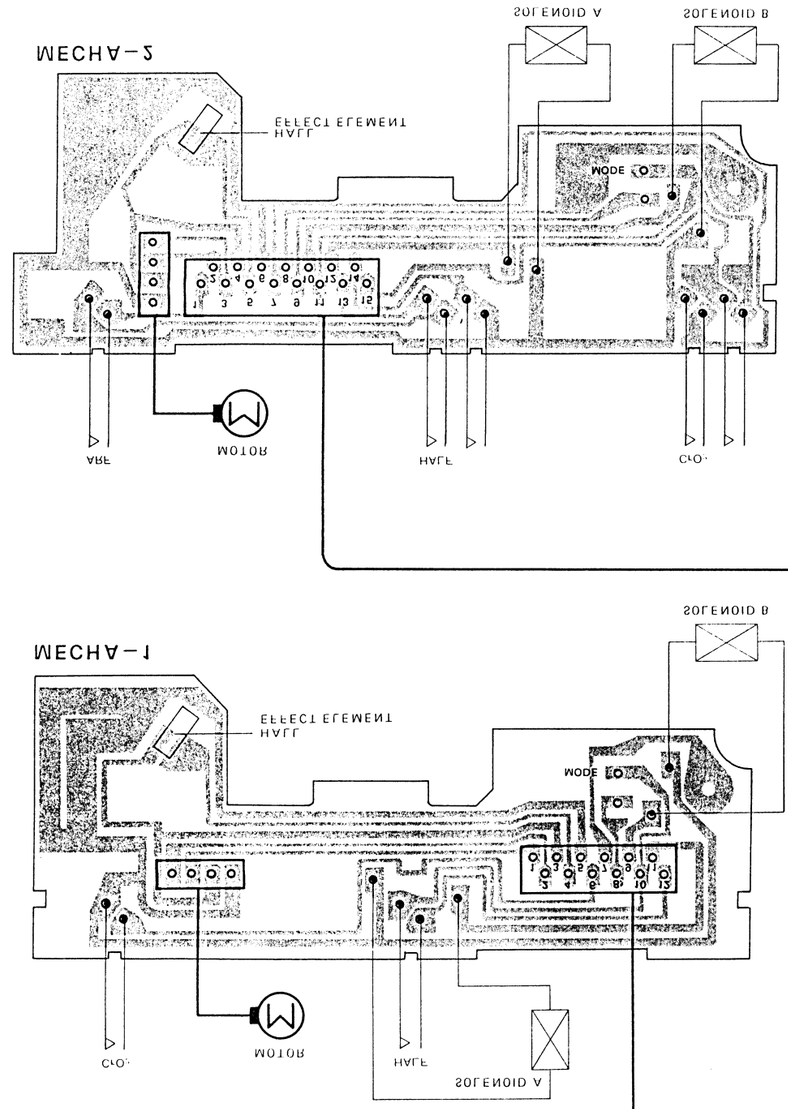
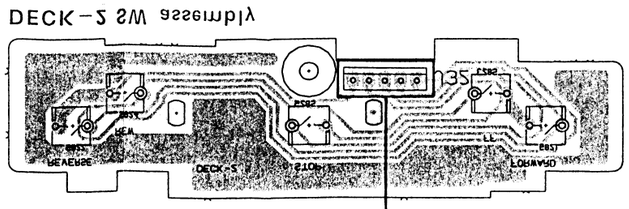
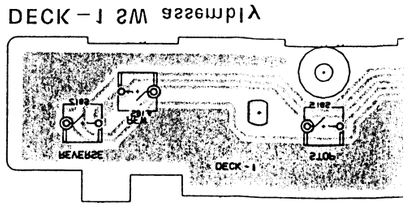
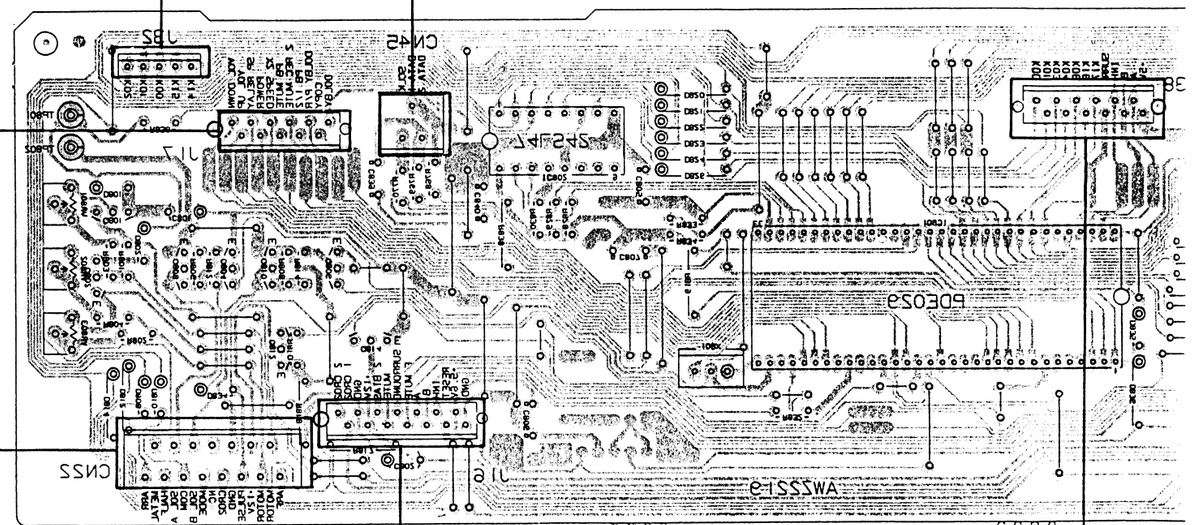


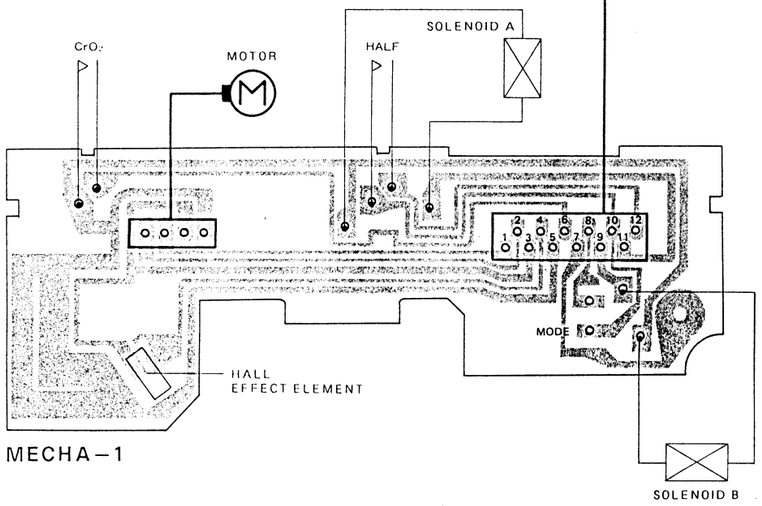




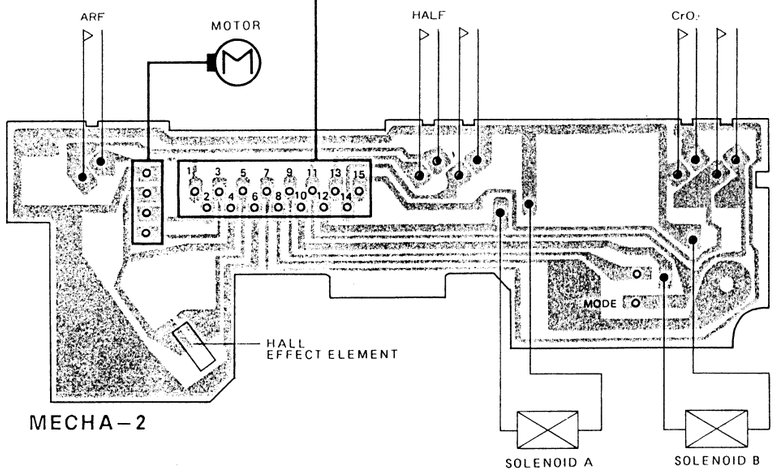


NOTE:
This picture shows the foil side of the printed circuit.

10.3.2 AMP,GEQ CTRL(AWZ2218), DECK-1SW, DECK-2SW, DECK CTRL(AWZ2219), DECK CENTER assembly, MECHA-1 and MECHA-2 UNIT



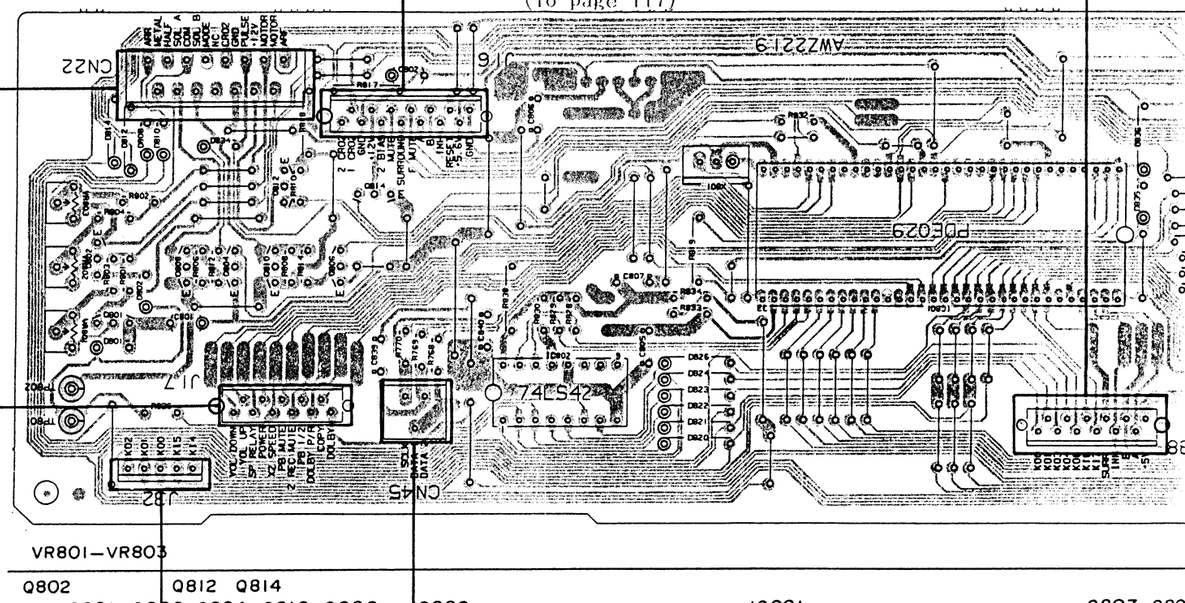
MECHA-1



MECHA-2

TO AF assembly
CN16
(To page 117)

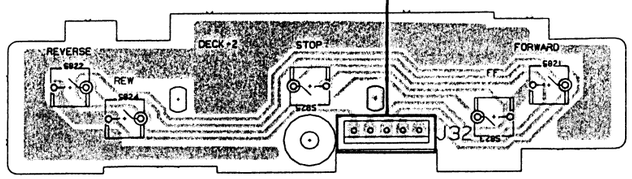
DECK CTRL assembly (AWZ2219)



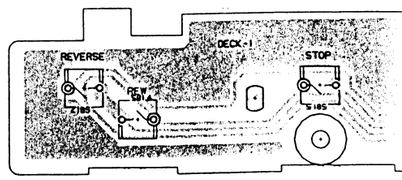
TO AF assembly
CN17
(To page 117)

TO AF assembly
J45
(To page 118)

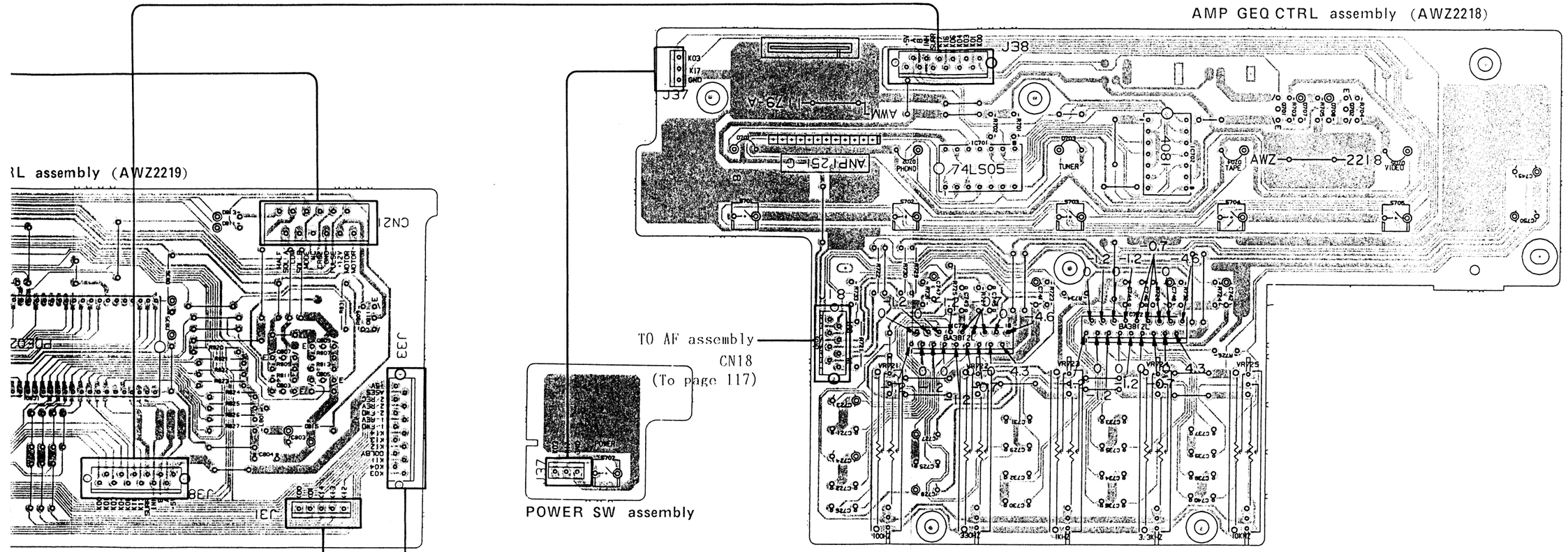
www.manualscenter.com



DECK-2 SW assembly



DECK-1 SW assembly



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NOTE

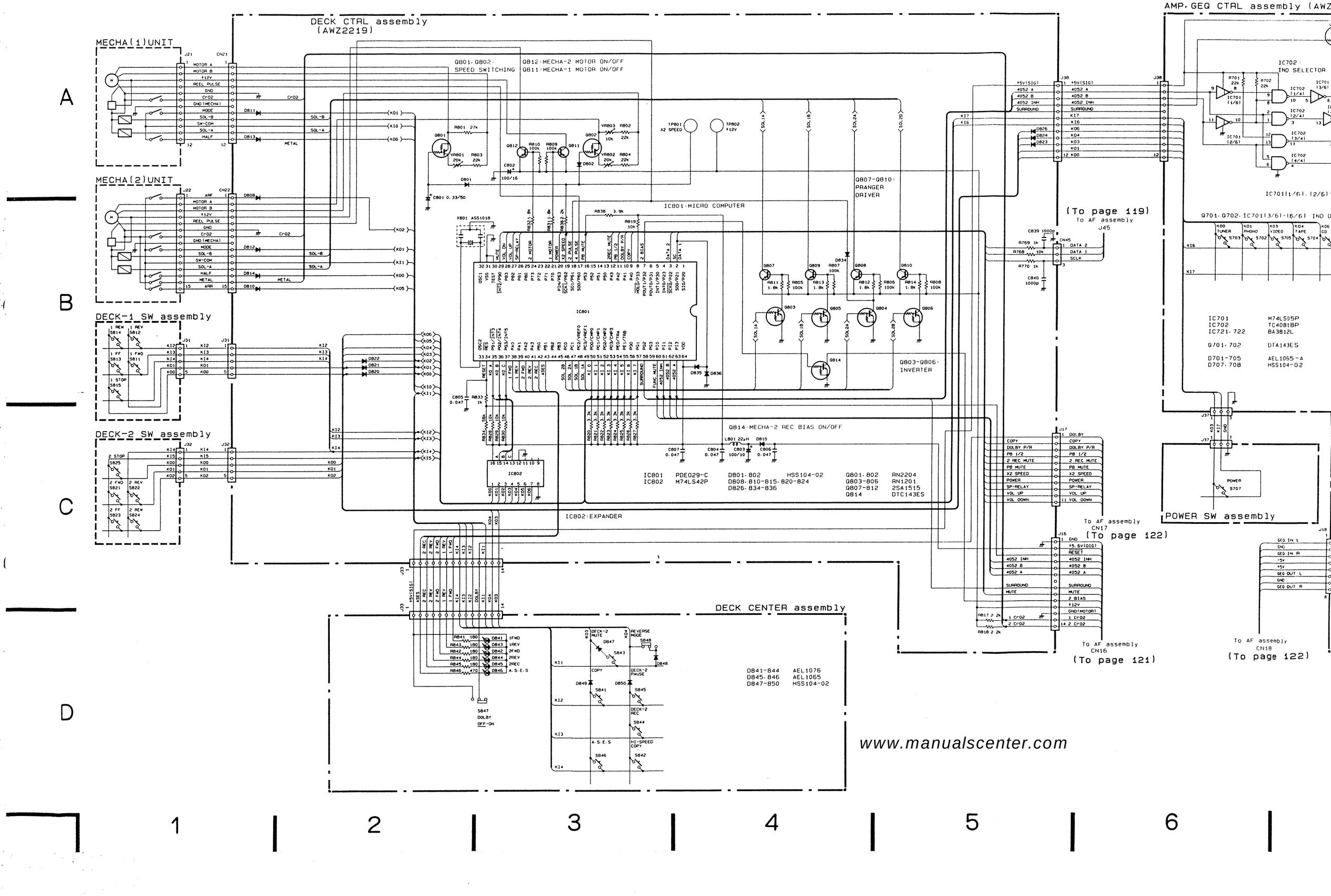
1. This P.C.B connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the following Table.

P.C.B. pattern diagram indication	Corresponding part symbol	Part Name
Q504 E C B	E C B or E C B	Transistor
Q215 E C B	E C B or E C B	Radiator type transistor
D203	D203	Diode
R237	R237	Resistor
C513	C513 +	Capacitor (Polarity)
C518	C518	Capacitor (Non-polarity)

Others

P.C.B. pattern diagram indication	Part Name
IC	IC
S	Switch
RY	Relay
L	Coil
F	Filter
VR	Variable resistor or Semi-fixed resistor

3. The capactor terminal marked with ⊖(double circles) shows negatine termianl.
4. The diode terminal marked with ⊖(double circles) shows cathode side.
5. The transistor terminal to which E is affixed shows the emitter.



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3 4 5 6 7 8 9

A B C D

AMP. GEQ CTRL assembly (AWZ2218)

MOTOR ON/OFF
MOTOR ON/OFF

Q802 VR803 10k R802 22k VR802 20k R804 22k D802

TP801 X2 SPEED
TP802 +12V

IC801: MICRO COMPUTER

Q807-Q810: PRANGER DRIVER

Q803-Q806: INVERTER

Q814: MECHA-2 REC BIAS ON/OFF

IC801 PDE029-C
IC802 M74LS42P

D801·802 HSS104-02
D808·810-815·820-824 RN2204
D826·834-836 RN1201

Q801·802 2SA1515
Q803-806 DTC143ES
Q807-812
Q814

02: EXPANDER

(To page 119)
To AF assembly
J45

J38 +5V(SIG) 4052 A 4052 B 4052 INH SURROUND K17 K16 K06 K04 K03 K01 K00 12

D826 D824 D823

CN45 DATA 2 DATA 1 SCLK

C839 1000p R769 1k R768 10k R770 1k C840 1000p

J17 DOLBY COPY DOLBY P/R PB 1/2 2 REC MUTE PB MUTE X2 SPEED POWER SP-RELAY VOL UP VOL DOWN 11

J16 GND +5.6V(DIG) RESET 4052 INH 4052 B 4052 A SURROUND MUTE 2 BIAS +12V GND(MOTOR) 1 CrO2 14 2 CrO2

RB17 2.2k RB18 2.2k

To AF assembly
CN17
(To page 122)

To AF assembly
CN16
(To page 121)

IC702: IND SELECTOR

IC701(1/6)·(2/6): INVERTER

Q701·Q702·IC701(3/6)-(6/6): IND DRIVER

K00 TUNER S703 K01 PHONO S702 K03 VIDEO S705 K04 TAPE S704 K06 CD S701

IC701 M74LS05P
IC702 TC40818P
IC721·722 BA3812L

Q701·702 DTA143ES

D701-705 AEL1065-A
D707·708 HSS104-02

J37 K03 K17 GND

POWER S707

POWER SW assembly

To AF assembly
CN18
(To page 122)

J18 GEQ IN L GND GEQ IN R -5V +5V GEQ OUT L GND GEQ OUT R 8

R730 56 R729 56 R733 100 R734 100

IC721·IC722: GEQ CONTROL

100Hz L 100Hz R 330Hz L 330Hz R 1kHz L 1kHz R 3.3kHz R 10kHz L 10kHz R 3.3kHz L

VR721 (100Hz) VR722 (330Hz) VR723 (1kHz) VR724 (3.3kHz) VR725 (10kHz)

MECHA-2 Lch PLAY

DECK CENTER assembly

DECK-2 MUTE S843 REVERSE MODE S848 D848 COPY S841 DECK-2 PAUSE D850 S845 DECK-2 REC S844 A.S.E.S S846 HI-SPEED COPY S847

D841-844 AEL1076
D845·846 AEL1065
D847-850 HSS104-02

MECHA-2 Lch PLAY

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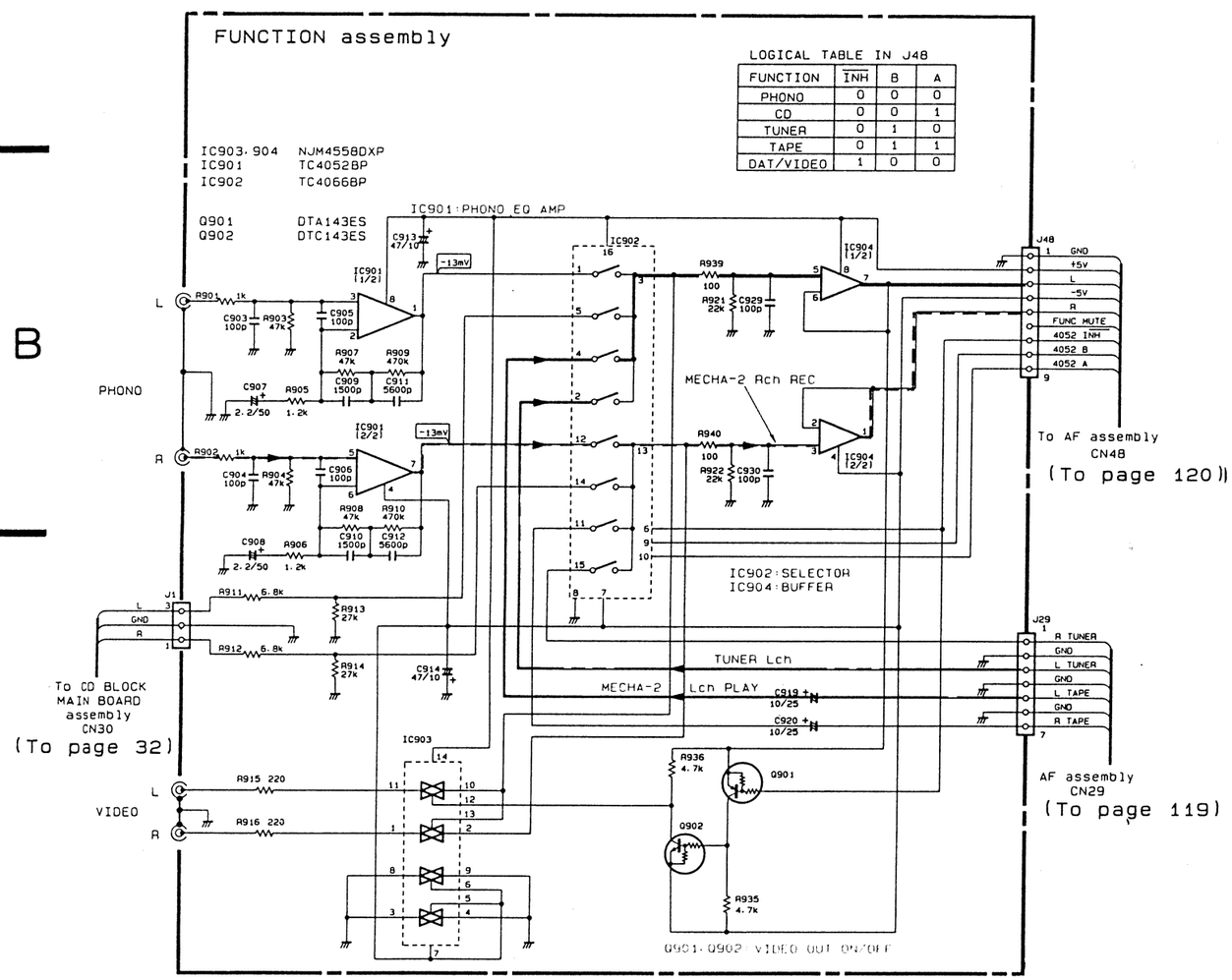
10.3.3 FUNCTION assembly

MECHA-2 Lch PLAY

MECHA-2 Rch REC

TUNE Lch



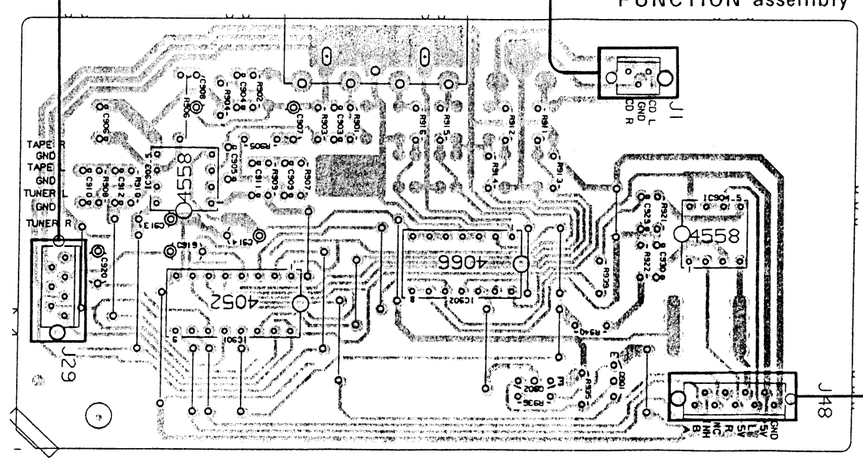
LOGICAL TABLE IN J48

FUNCTION	INH	B	A
PHONO	0	0	0
CD	0	0	1
TUNER	0	1	0
TAPE	0	1	1
DAT/VIDEO	1	0	0

To CD BLOCK MAIN BOARD assembly CN30 (To page 34)

TO AF assembly CN29 (To page 118)

TO AF assembly CN48 (To page 117)



IC903 IC901 IC902 Q902 Q901 IC904

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NOTE

1. This P.C.B connection diagram is viewed from the parts mounted side.
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P.C.B. pattern diagram indication	Corresponding part symbol	Part Name
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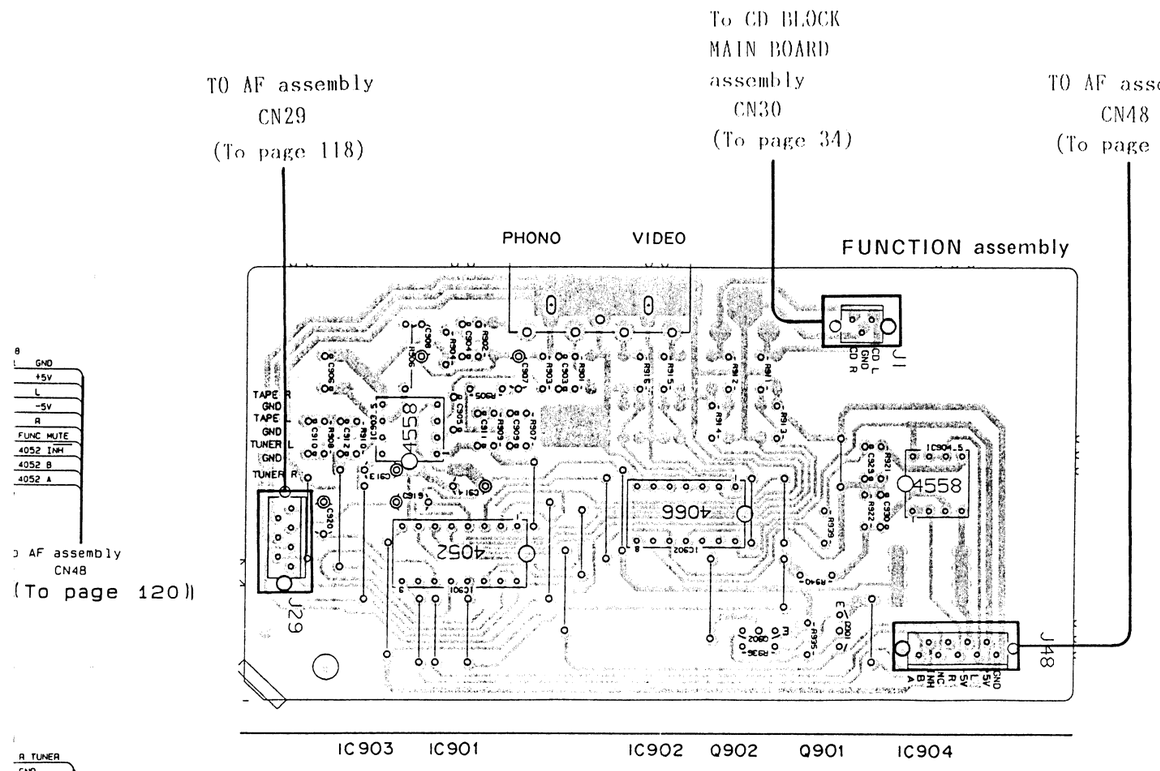
Q215 (E C B)	E C B or E C B	Radiator type transistor
D203	D203	Diode
R237	R237	Resistor
C513	+	Capacitor (Polarity)
C518		Capacitor (Non-polarity)

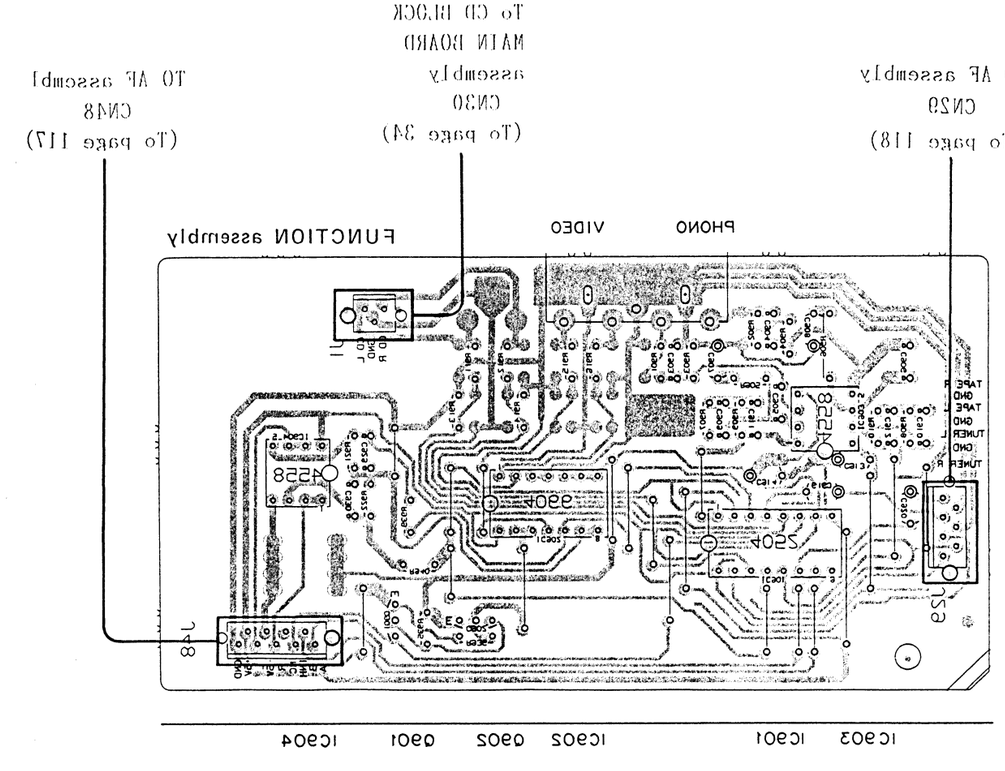
Others

P.C.B. pattern diagram indication	Part Name
IC	IC
S	Switch
RY	Relay
L	Coil
F	Filter
VR	Variable resistor or Semi-fixed resistor

3. The capactor terminal marked with ⓞ(double circles) shows negatine termianl.
4. The diode terminal marked with ⓞ(double circles) shows cathode side.
5. The transistor terminal to which E is affixed shows the emitter.

NOTE:
This picture shows the foil side of the printed circuit.





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NOTE

1. This P.C.B connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the following Table.

P.C.B. pattern diagram indication	Corresponding part symbol	Part Name
Q504 E	or	Transistor
Q215	or	Radiator type transistor
D203	D203	Diode
R237	R237	Resistor
C513	+	Capacitor (Polarity)
C518		Capacitor (Non-polarity)

Others

P.C.B. pattern diagram indication	Part Name
IC	IC
S	Switch
RY	Relay
L	Coil
F	Filter
VR	Variable resistor or Semi-fixed resistor

3. The capactor terminal marked with ⊙(double circles) shows negatine termianl.
4. The diode terminal marked with ⊙(double circles) shows cathode side.
5. The transistor terminal to which E is affixed shows the emitter.

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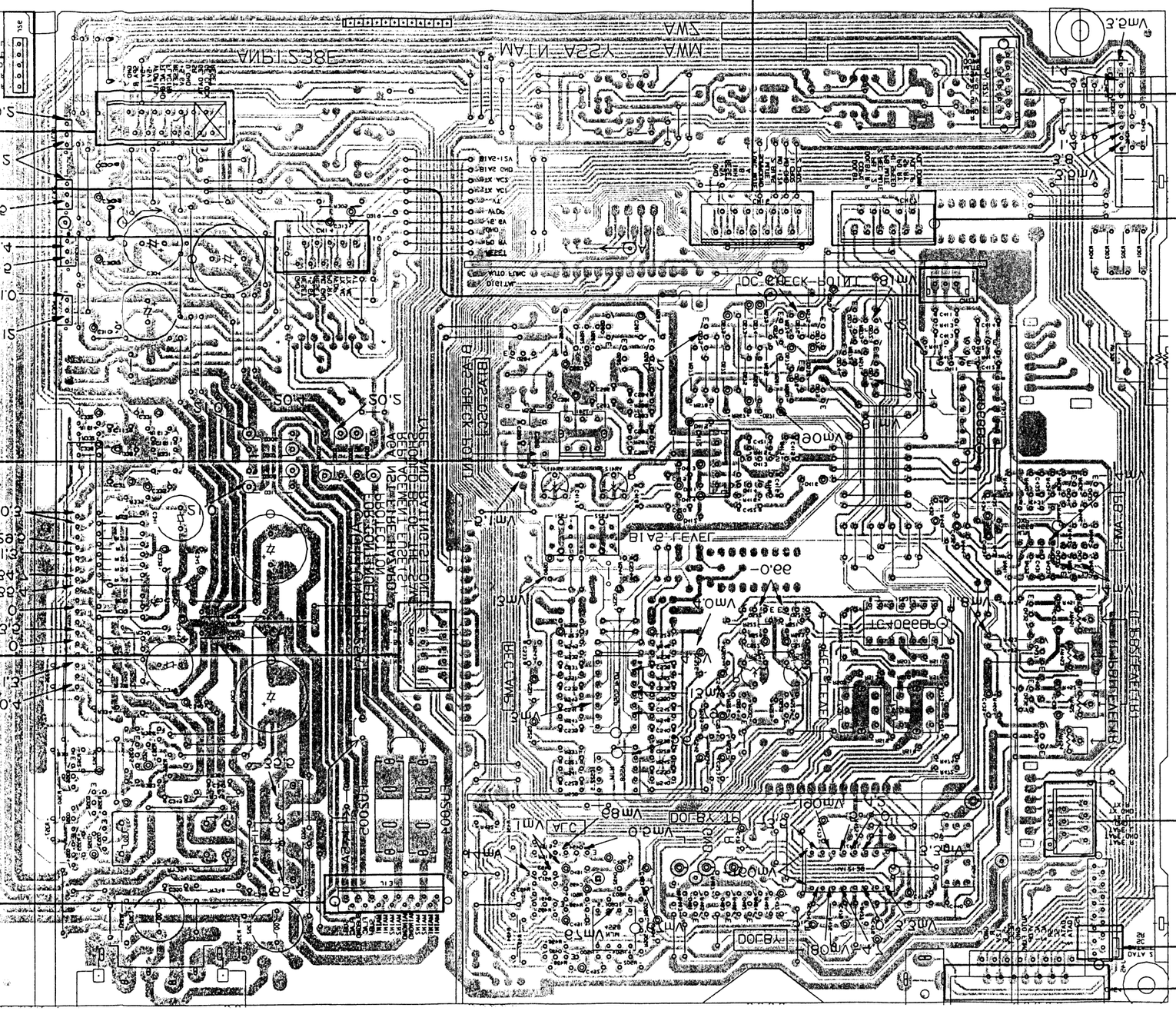
NOTE:
This picture shows the foil side of the printed circuit.



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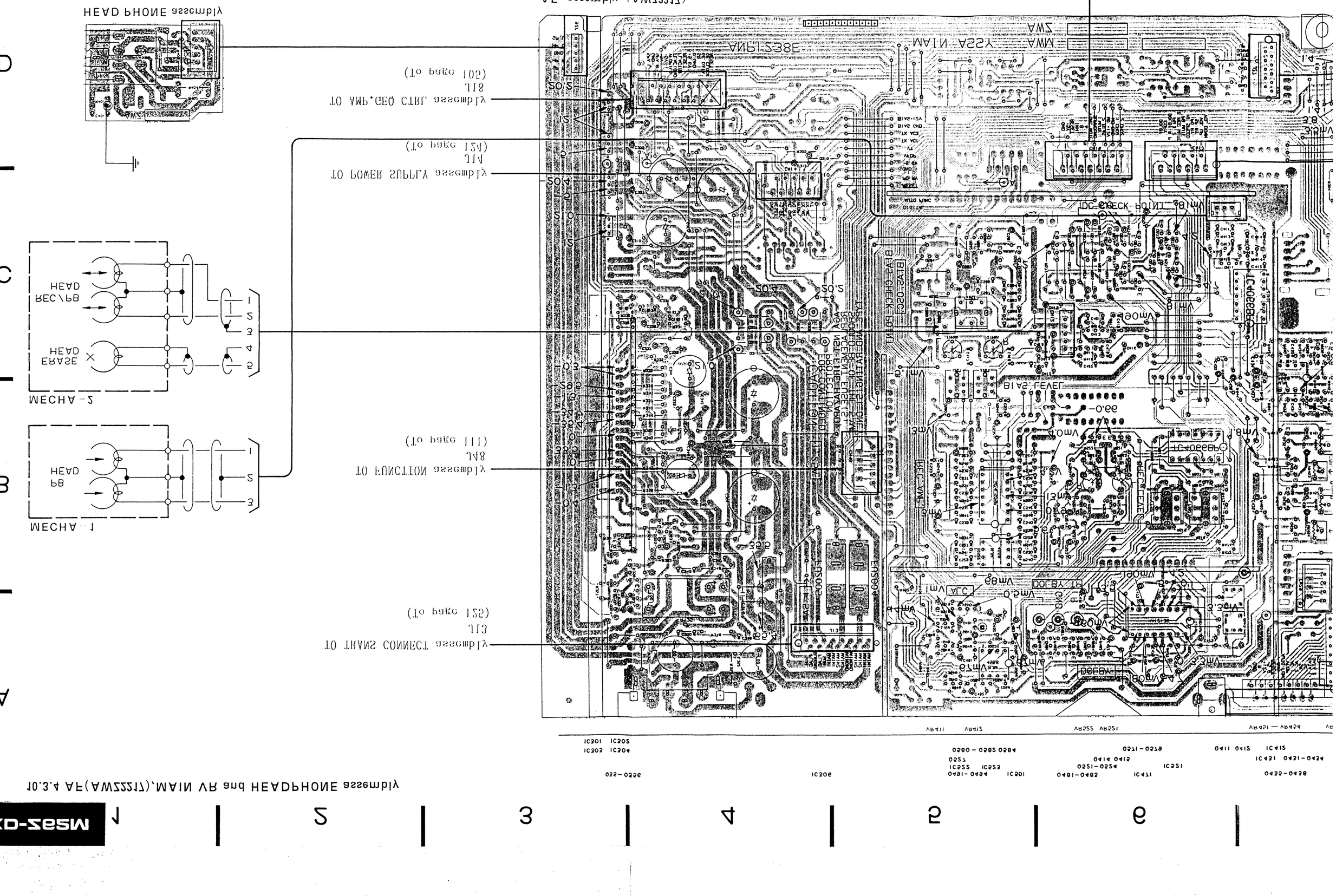
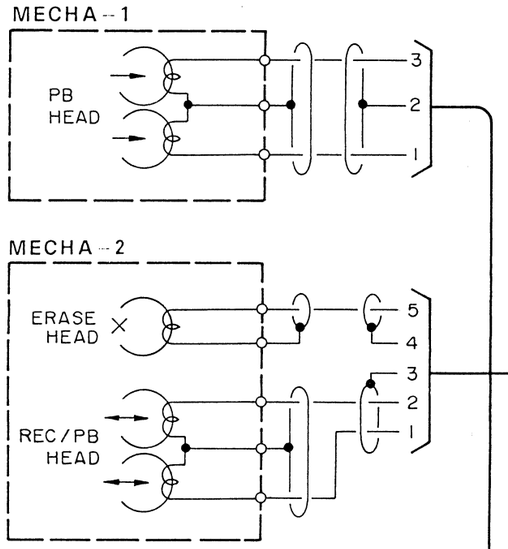
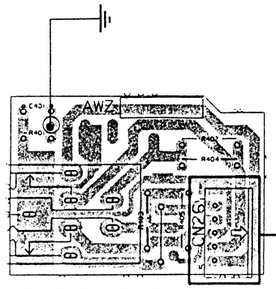


MS25-QX

Fig. 4.3.4 AV(AW22577),MAIN AV and HEADPHONE assembly

10.3.4 AF(AWZ2217),MAIN VR and HEADPHONE assembly





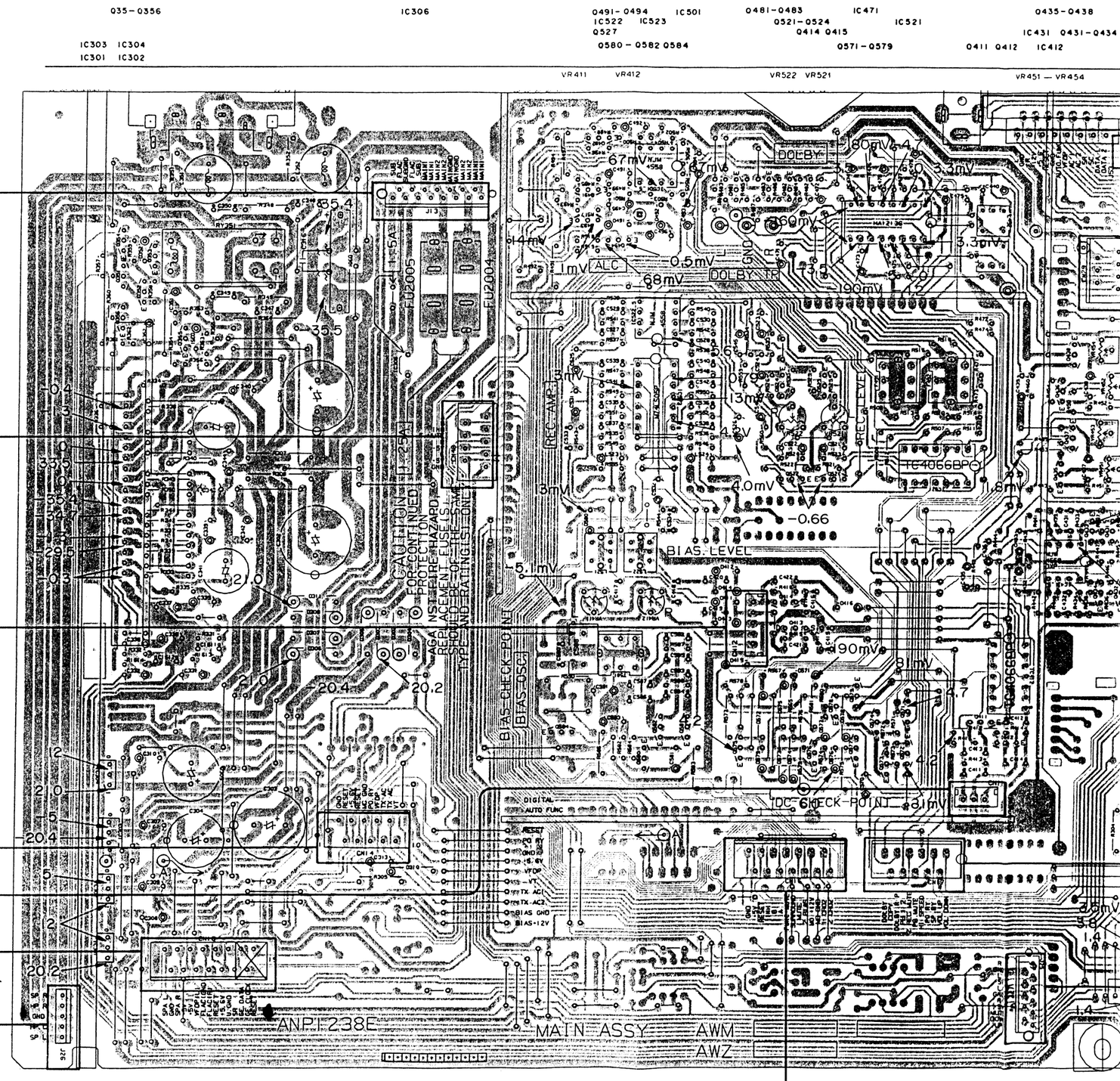
HEAD PHONE assembly

TO TRANS CONNECT assembly
J13
(To page 125)

TO FUNCTION assembly
J48
(To page 111)

TO POWER SUPPLY assembly
J14
(To page 124)

TO AMP.GEQ CTRL assembly
J18
(To page 105)



AF assembly (AWZ2217)

TO DECK CTRL assembly
J16
(To page 104)

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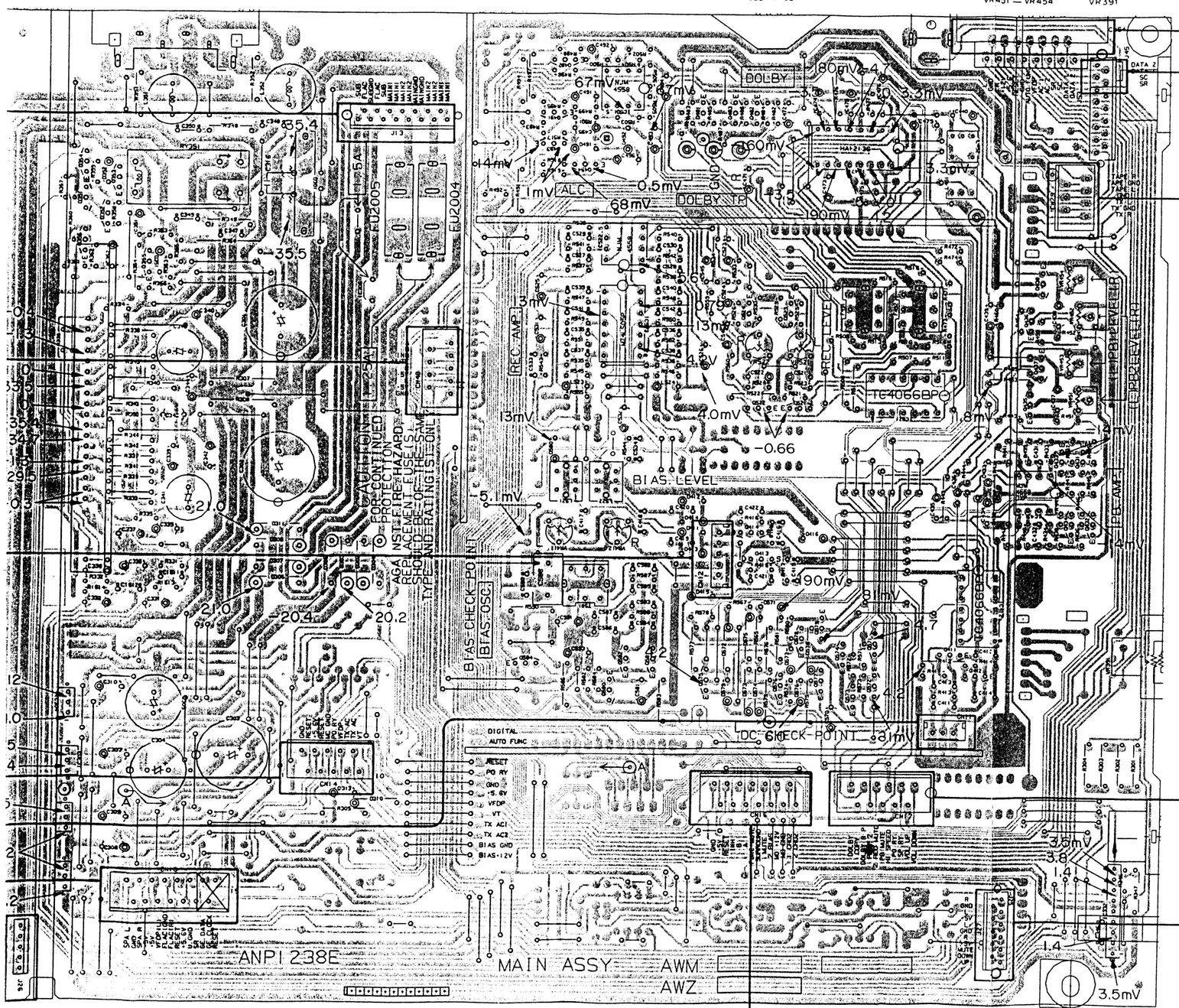

NOTE

1. This P.C.B connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the following Table.

P.C.B. pattern diagram indication	Corresponding part symbol	Part Name
Q504 (E B C)	or	Transistor
Q215 (E B C)	or	Radiator type transistor
D203	D203	Diode
R237	R237	Resistor
C513	+	Capacitor (Polarity)
C518		Capacitor (Non-polarity)

Others

P.C.B. pattern diagram indication	Part Name
IC	IC
S	Switch
RY	Relay
L	Coil
F	Filter
VR	Variable resistor or Semi-fixed resistor

3. The capactor terminal marked with ◎(double circles) shows negatine termianl.
4. The diode terminal marked with ◎(double circles) shows cathode side.
5. The transistor terminal to which E is affixed shows the emitter.

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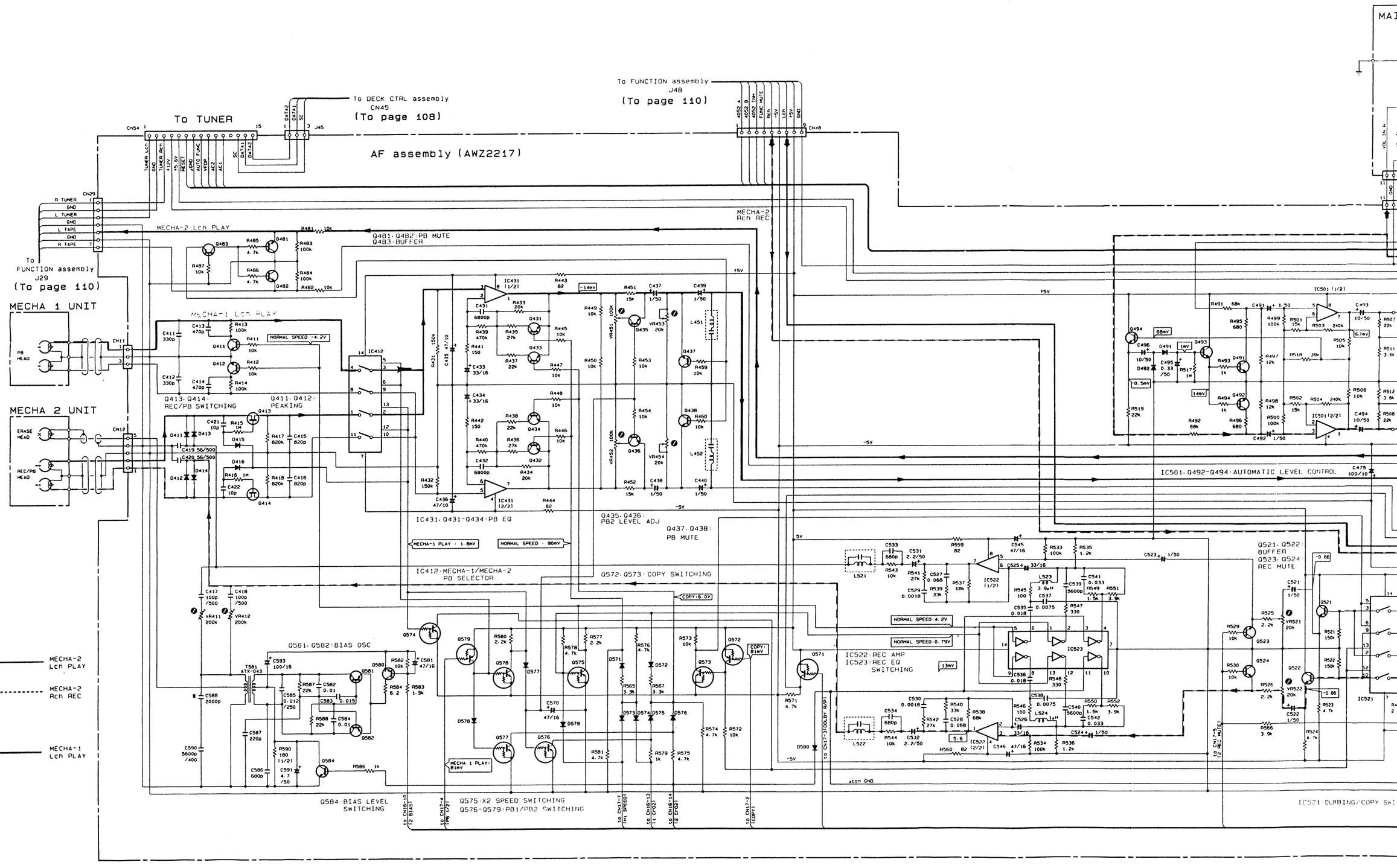

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MAIN VR assembly Q393 2SA1048 IC391 NJM4558DXP

IC391·Q393:BUFFER
Q391·Q392:MUTE

Q391·392
2SC2878

IC331:POWER AMP

Q351-Q354 Protection

HEAD PHONE assembly

Q351·Q352:DC DET
Q353:SP RELAY DRIVER
Q354:SP RELAY ON/OFF

IC301·304 MC7812CT
IC302 NJM78M05FA
IC303 NJM79M05FA
IC431·501·522 NJM4558DXP
IC331 STK4142-2GP
IC332 TA7291S
IC412·521 TC4066BP
IC523 M74LS05P
IC306 ICP-N38
IC471 HA12136

IC301-IC304·IC306: REGULATOR

Q578 AN1201
Q354·573-577 AN1203
Q571·572·579 AN2203
Q355·483·580 2SA1048
Q581·582 2SA1515
Q493·494 2SC1740SLN
Q351-353·356·411·412
Q431-438·481·482
Q491·492·521·522 2SC2458
Q584 2SC2603
Q523·524 2SC2878
Q413·414 2SK373

MECHA-2
Lch PLAY

MECHA-2 Rch REC

IC332:
MOTOR DRIVER

IC521: DUBBING/COPY SWITCHING

Q521·0522
BUFFER
Q523·0524
REC MUTE

D310 RO7.5ESB
D351·352 HSS104-02
D411-416·491·
D492·571-580
D301 RBV402
D302-308·311 S5566

AUTOMATIC LEVEL CONTROL

FRONT SPEAKER Lch Rch

DC +12V OUTPUT
To TURNTABLE

(To page 123)
To POWER SUPPLY assembly J14

(To page 123)
To TRANS CONNECT assembly J13

To AMP GEQ CTRL assembly J18
(To page 109)

To DECK CTRL assembly J16
(To page 108)

To DECK CTRL assembly J17
(To page 108)

(To page 123)

10.3.5 POWER SUPPLY(AWZ2247),CONNECT and TRANS CONNECT assembly

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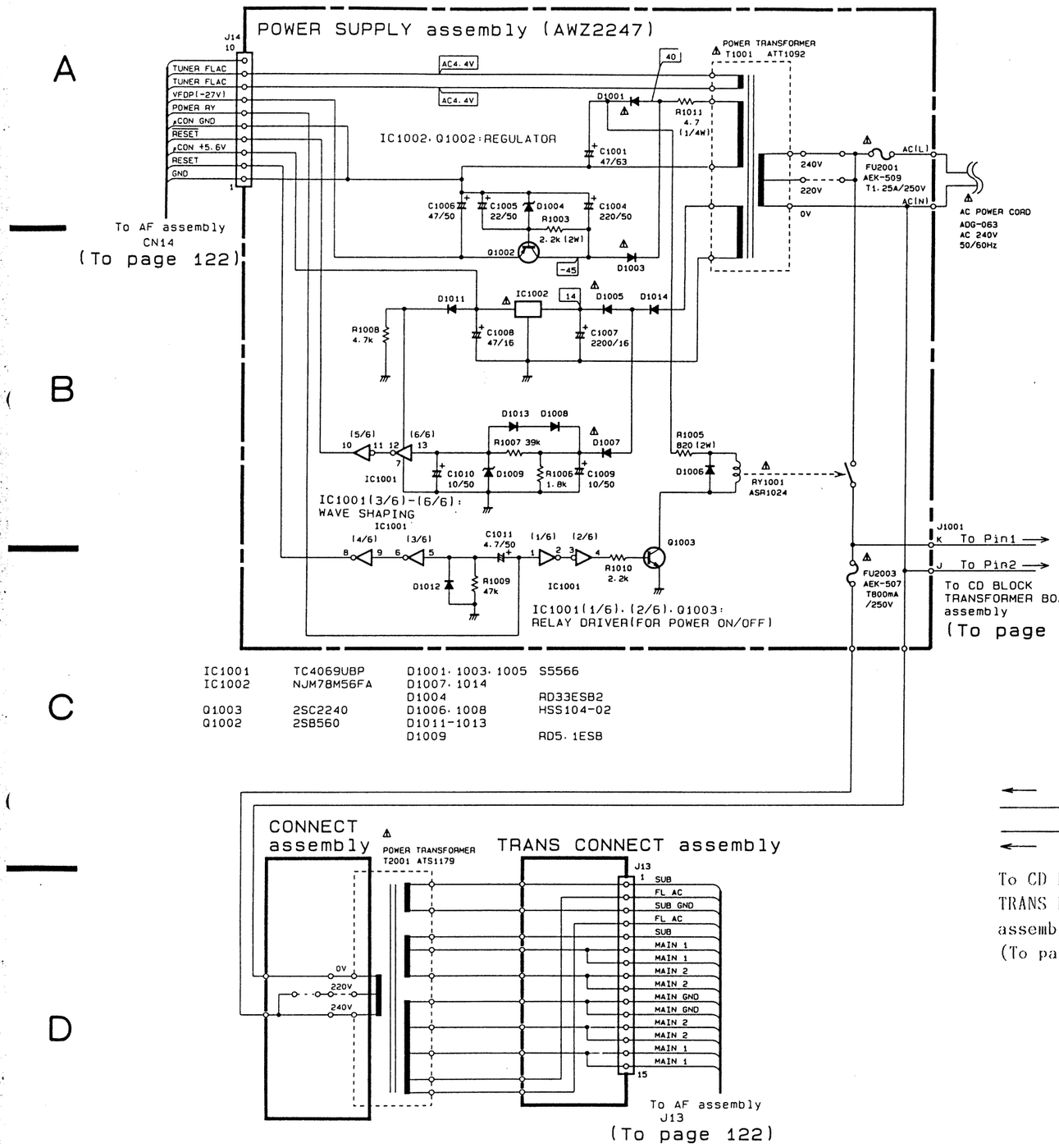
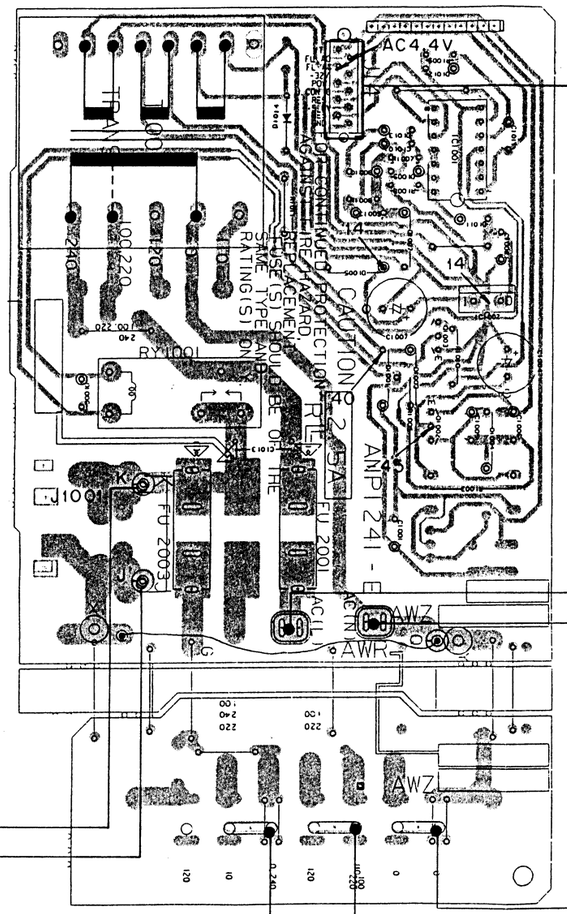
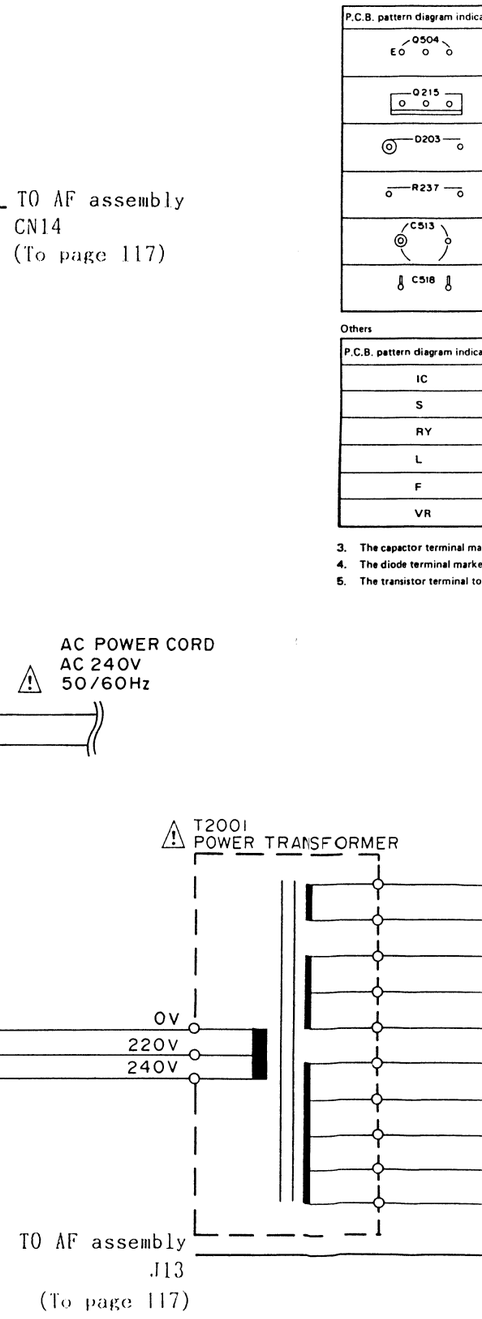


IC1001	TC4069UBP	D1001, 1003, 1005	S5566
IC1002	NJM78M56FA	D1007, 1014	
		D1004	RD33ESB2
Q1003	2SC2240	D1006, 1008	HSS104-02
Q1002	2SB560	D1011-1013	
		D1009	RD5.1ESB

POWER SUPPLY assembly (AWZ2247)





NOTE

1. This P.C.B connection dia
2. The parts which have be
with the corresponding w

P.C.B. pattern diagram indica
Q504
Q215
D203
R237
C513
C518

Others

P.C.B. pattern diagram indica
IC
S
RY
L
F
VR

3. The capactor terminal ma
4. The diode terminal marke
5. The transistor terminal to

NOTE

1. This P.C.B connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the following Table.

P.C.B. pattern diagram indication	Corresponding part symbol	Part Name
Q504 E	or	Transistor
Q215	or	Radiator type transistor
D203	D203	Diode
R237	R237	Resistor
C513	+	Capacitor (Polarity)
C518		Capacitor (Non-polarity)

Others

P.C.B. pattern diagram indication	Part Name
IC	IC
S	Switch
RY	Relay
L	Coil
F	Filter
VR	Variable resistor or Semi-fixed resistor

3. The capactor terminal marked with ◎(double circles) shows negatine termianl.
4. The diode terminal marked with ◎(double circles) shows cathode side.
5. The transistor terminal to which E is affixed shows the emitter.

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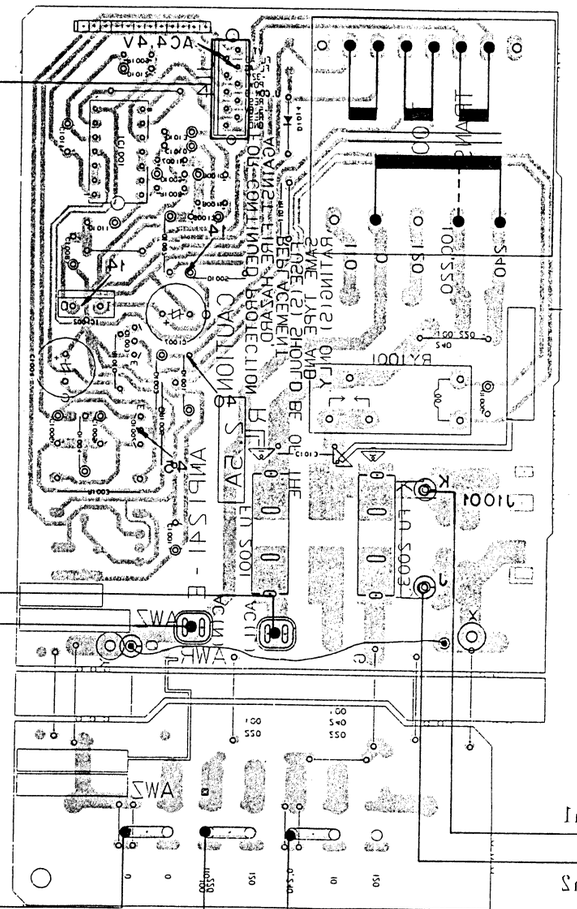
NOTE:
This picture shows the foil side of the printed circuit.

POWER SUPPLY assembly (AWZ2247)



To AF assembly
CN14
(To page 117)

AC POWER CORD
AC 240V
50/60Hz

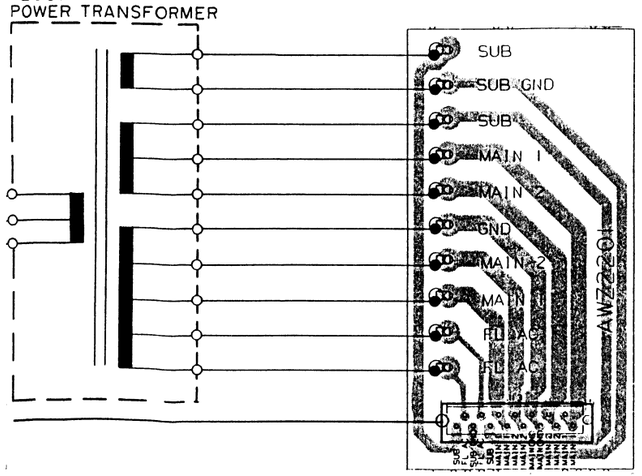
To pin1

To pin2

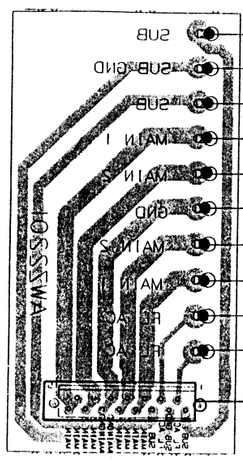
To CD BLOCK
TRANS BOARD
assembly
(To page 33)

CONNECT assembly

T2001
POWER TRANSFORMER



TRANS CONNECT assembly



TRANS CONNECT assembly

T2001
POWER TRANSFORMER

0V
220V
240V

TO AF assembly
J13
(To page 117)

A
B
C
D

10.5 ADJUSTMENTS

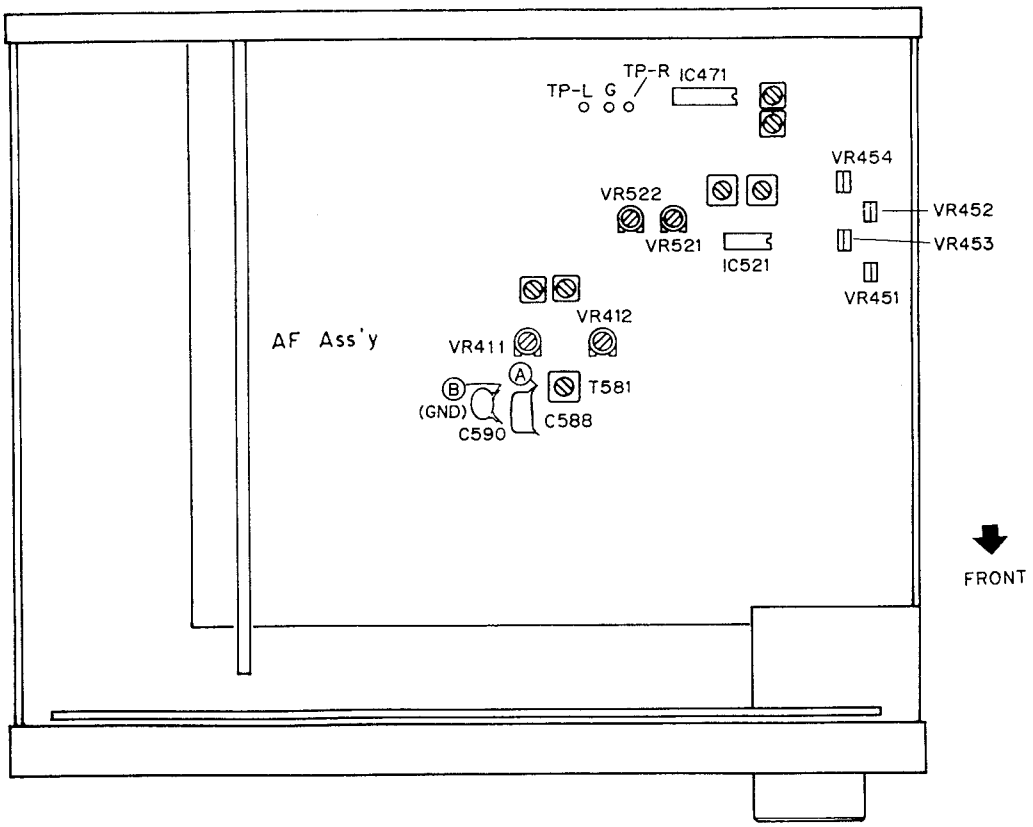


Fig.10.1. Adjustment location

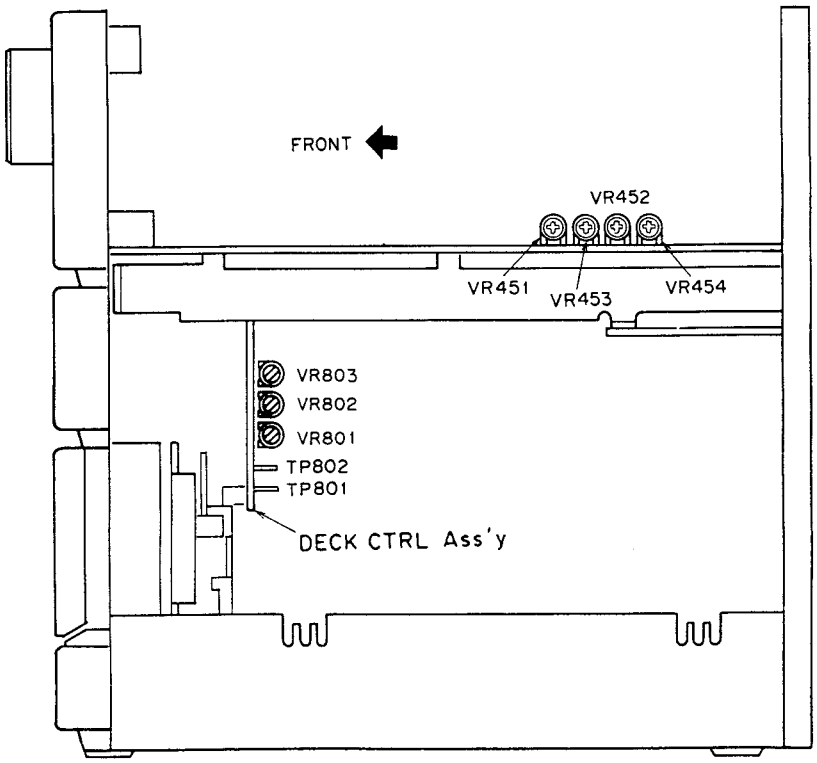


Fig.10.2. Adjustment location

CAPACITORS

Mark	Symbol & Description	Part No.
	C1009,C1010	CEAS100M50
	C1005	CEHAQ220M50
	C1004	CEAS221M50
	C1007	CEAS222M16
	C1011	CEAS4R7M50
	C1008	CEAS470M16
	C1006	CEAS470M50
	C1001	CEAS470M63

RESISTORS

Mark	Symbol & Description	Part No.
	R1011	RD1/4PMFL4R7J
	R1003	RS2LMF222J
	R1005	RS2LMF821J
	Other resistors	RD1/8PM□□□J

CONNECT assembly

No parts are supplied with the connection assembly.

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- Adjustment and measurement are usually made in the AF Ass'y, unless specified otherwise.
- Set the graphic equalizer toFLAT. Depending on the country of destination, the unit may be equipped with a MIC mixing volume control.
  If a MIC mixing volume control is built in, please set to the MIN position.
- The function should always be set to "TAPE" unless otherwise specified.

Adjustment of Mechanical System

- Test tape: STD-301 (3 kHz,30 min.)
- Setting of double speed mode: Short-circuit TP801 and TP802 of the Control Ass'y. To release the mode, break the short circuit.

1. Adjustment of tape speed

No.	Mode	Input signal & Test tape	Adjustment location		Measuring location	Adjustment value	Remarks
1	PLAY	Playback the STD-301 tape to 3 kHz.	Deck I	DECK CTRL Ass'y VR801	TP-L (Lch)	Press the PLAY SW and adjust the frequency to 3010 Hz ±10 Hz. Make sure that the wow and flutter is within 0.2 %.	
2	PLAY (Double speed mode)			——		Press the PLAY SW in double speed mode and confirm that the frequency is 6000 Hz ±1000 Hz. Note down the figure.	Release the double speed mode after adjustment.
3	PLAY (Double speed mode)		Deck II	DECK CTRL Ass'y VR803	TP-R (Rch)	Press the PLAY SW in double speed mode and adjust the frequency to be within ±30 Hz of the figure recorded at step No. 2.	Release the double speed mode after adjustment.
4	PLAY			DECK CTRL Ass'y VR802		Press the PLAY SW and adjust the frequency to 3010 Hz ±10 Hz. Make sure that the wow and flutter is within 0.2 %.	

Adjustment of Electric System

■ Check and conduct the following before adjusting the electric system.

1. Adjustment of tape speed has been completed.
2. Clean and demagnetize the head using a head eraser.
3. When measured, the level should be 0 dBV = 1 Vrms.
4. Use side A of the specified tape for adjustment.
   STD-331B: For adjustment of playback system.
   STD-630: NORMAL blank tape
   STD-620: CrO_2 blank tape
   STD-610: METAL blank tape
5. Prepare the following measuring devices:
   AC millivoltmeter, Low-frequency oscillator, Attenuator, Oscilloscope
6. Adjust both L and R channels, unless specified otherwise.
7. Set the DOLBY NR switches to OFF, unless specified otherwise.
8. Warm up the unit for several minutes before adjustment. Especially before adjusting the frequency characteristics of recording and playback, warm up for 3 to 5 minutes in REC/PLAY mode.
9. Make sure to follow the proper order of the adjustment procedure. Any change in the order may cause an imperfect result.

List of Adjustment

Deck I

1. Head azimuth adjustment
2. Playback level adjustment

Deck II

1. Head azinuth adjustment
2. Playback level adjustment
3. Adjustment frequency characteristics of recording/playback
4. Recording level adjustment

Checking of Decks II

1. Make sure the ALC is operating properly.

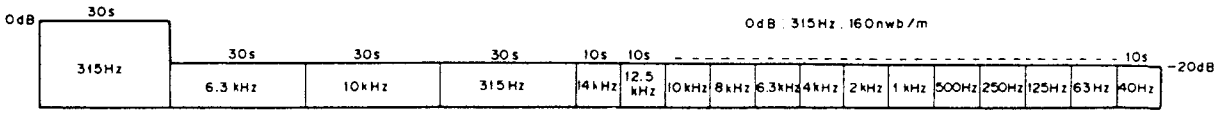

Fig.10.3. Test tape STD-331B

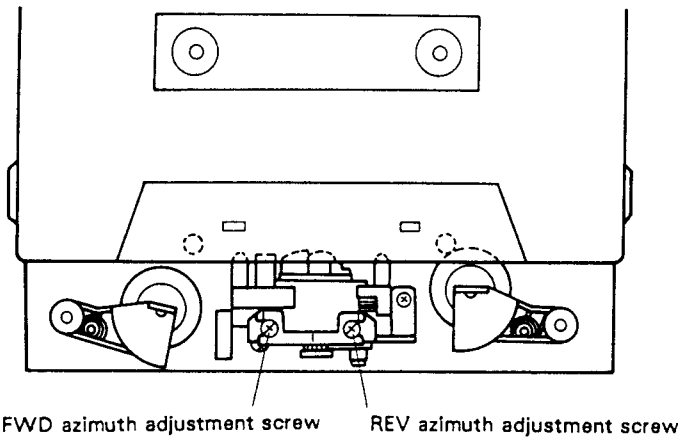

Fig.10.4. Head azimuth adjustment

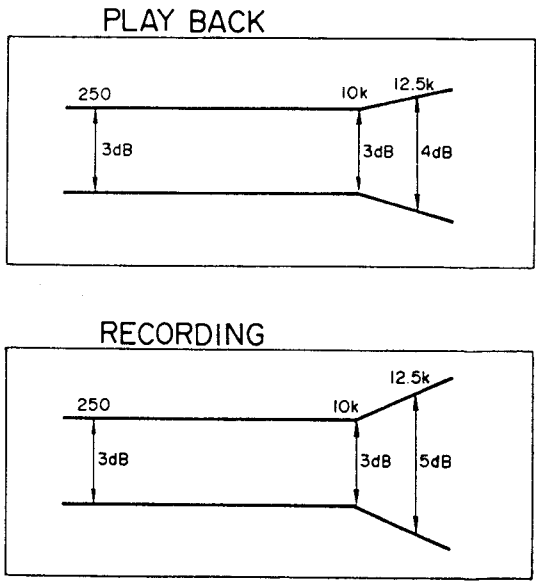

Fig.10.5. Frequency characteristics

• Head Adjustment of Deck I

- Deck I is provided with an automatic tape selector mechanism.
- Note: Do not switch over FWD and REV while the driver is inserted.

1. Head Azimuth Adjustment

Procedure	Tape selector	Mode	Input signal/test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1	NORM	PLAY	Playback the test tape STD-331B (10 kHz, -20 dB).	Head azimuth adjustment screw (Fig.10-4)	TP-L (Lch) TP-R (Rch)	Maximum playback signal level	Lock the screw with screw lock after completing adjustment.

2. Playback Level Adjustment

- Be sure to make a careful adjustment, as the adjustment determines the DOLBY NR level for playback.

Procedure	Tape selector	Mode	Input signal/test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1	NORM	PLAY	Playback the test tape STD-331B (315 Hz, 0 dB).	VR453 (Lch) VR454 (Rch)	TP-L (Lch) TP-R (Rch)	−6.7 dBV	

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• Head Adjustment of Deck II

- Deck II is provided with an automatic tape selector mechanism.
- Note: Do not switch over FWD and REV while the driver is inserted.

1. Head Azimuth Adjustment

Procedure	Tape selector	Mode	Input signal/test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1	NORM	PLAY	Playback the test tape STD-331B (10 kHz, -20 dB).	Head azimuth adjustment screw (Fig.10-4)	TP-L (Lch) TP-R (Rch)	Maximum playback signal level	Lock the screw with screw lock after completing adjustment.

2. Playback Level Adjustment

- Be sure to make a careful adjustment, as the adjustment determines the DOLBY NR level for playback.

Procedure	Tape selector	Mode	Input signal/test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1	NORM	PLAY	Playback the test tape STD-331B (315 Hz, 0 dB).	VR451 (Lch) VR452 (Rch)	TP-L (Lch) TP-R (Rch)	−6.7 dBV	

3. Adjustment of frequency characteristics of recording/playback

- As this procedure is for adjustment of the recording bias, be careful not to increase the distortion rate by under-adjusting the bias.

Procedure	Tape selector	Mode	Input signal/test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1	NORM	REC	Load the test tape STD-630 and set to record mode.	—	Area between Ⓐ and Ⓑ (A.F Ass'y) shown in Fig.10-1.	Confirm that the oscillation frequency is 105 kHz ±1 kHz.	If the adjustment value cannot be set within the sepcification, adjust the T581.
2	NORM	REC	Apply a signal of 315 Hz to the VIDEO input terminal and set the function to "VIDEO".	Input signal level	TP-L (Lch) TP-R (Rch)	−27.7 dBV	
3	NORM	REC/PLAY	Record and playback the test tape STD-630 (315 Hz and 10 kHz).	VR411 (Lch) VR412 (Rch)	TP-L (Lch) TP-R (Rch)	Repeat the correction so that the playback level of 10 kHz remains 0 ±0.5 dB in relation to 315 Hz.	

4. Recording Level Adjustment

Procedure	Tape selector	Mode	Input signal/test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1	NORM	REC	Apply a signal of 315 Hz to the VIDEO input terminal and set the function to "VIDEO".	Input signal level	TP-L (Lch) TP-R (Rch)	−7.7 dBV	
2	NORM	REC/PLAY	Record and playback the test tape STD-630 (315 Hz).	VR521 (Lch) VR522 (Rch)	TP-L (Lch) TP-R (Rch)	Repeat the recording and correction so that the playback level of 315 Hz is −6.7 dBV.	

• Checking Procedure for Deck II

1. Action of ALC

Procedure	Tape selector	Mode	Input signal/test tape	Adjustment location	Measuring location	Cheking value	Remarks
1	NORM	REC	Apply a signal of 315 Hz to the VIDEO input terminal and set the function to "VIDEO".	Input signal level	TP-L (Lch) TP-R (Rch)	−7.7 dBV	
2				+10 dB against the input level of step 1.		−2.7 dBV ±2.5 dB	